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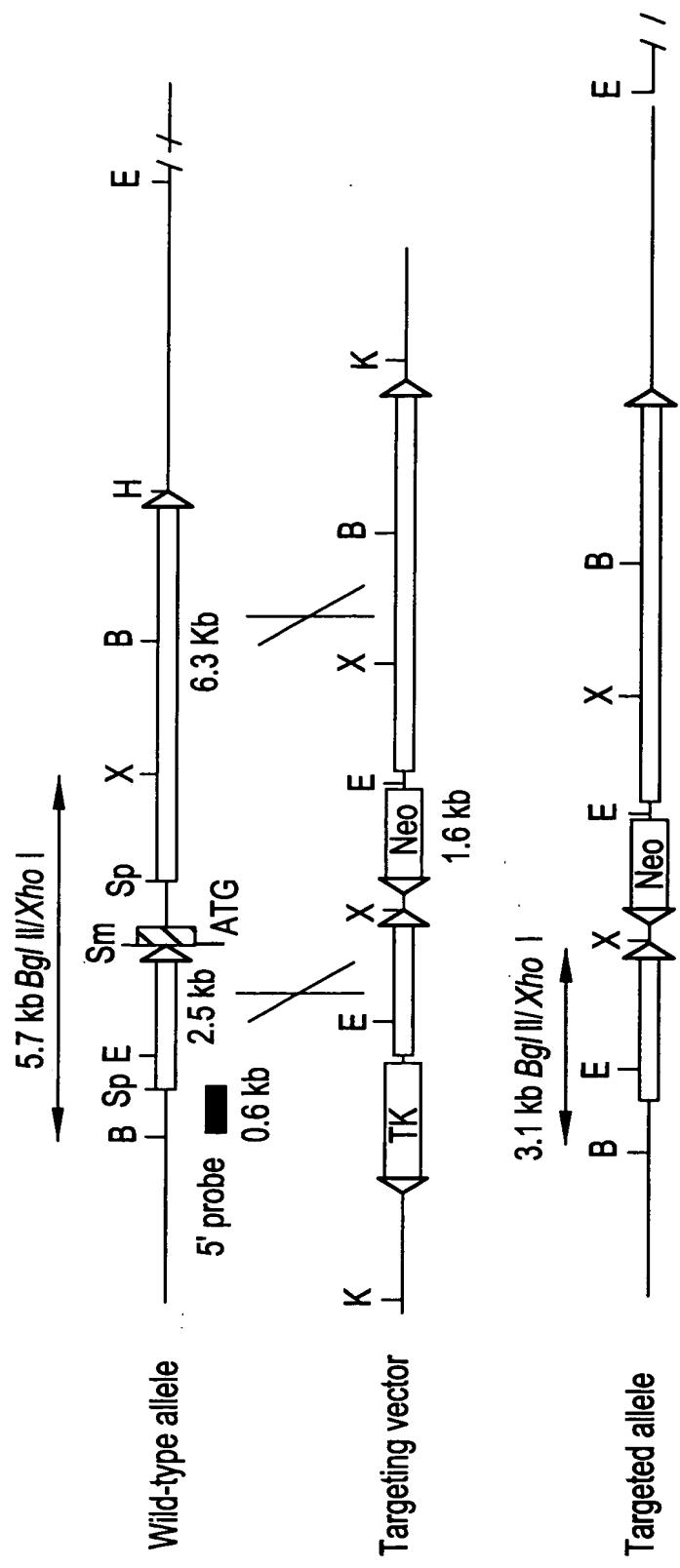
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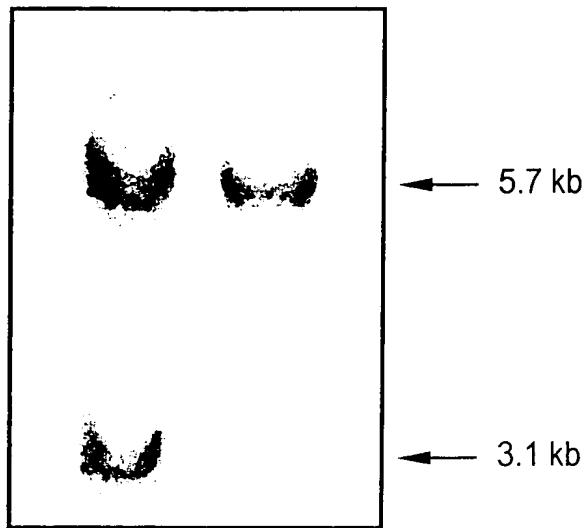
FIG. 1A



## FIG. 1B

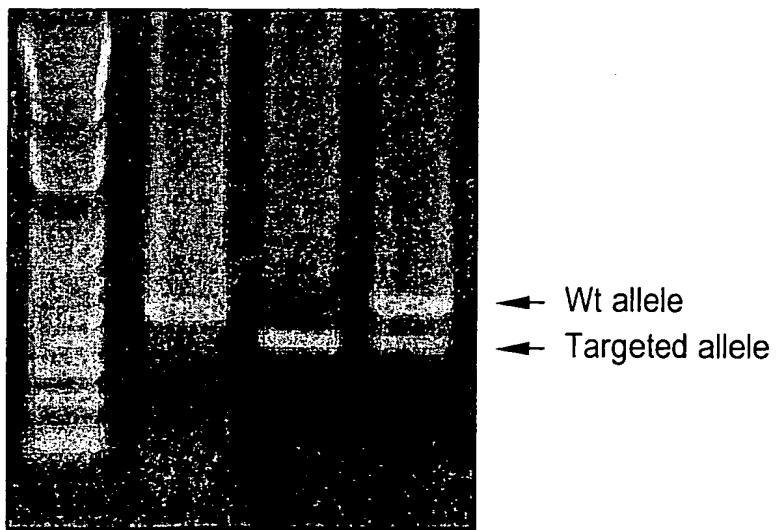
ES clone genotype

$+/-$      $+/+$

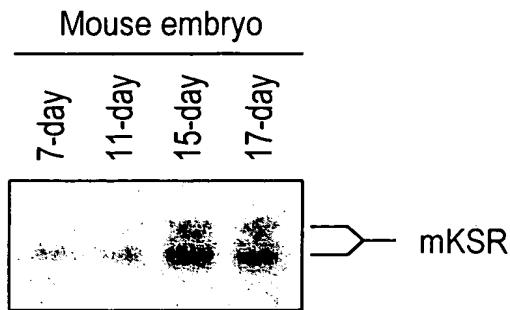


## FIG. 1C

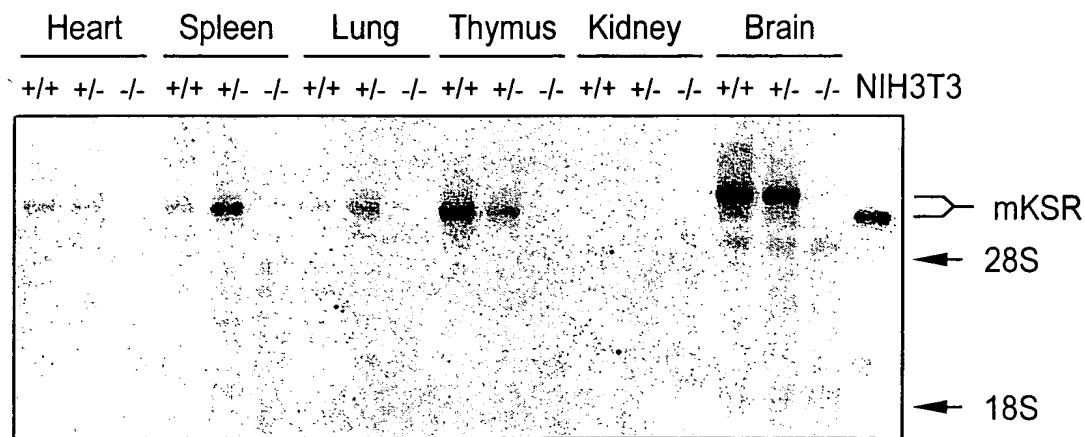
M     $+/+$      $-/-$      $+/-$



## FIG. 1D



## FIG. 1E



## FIG. 1F

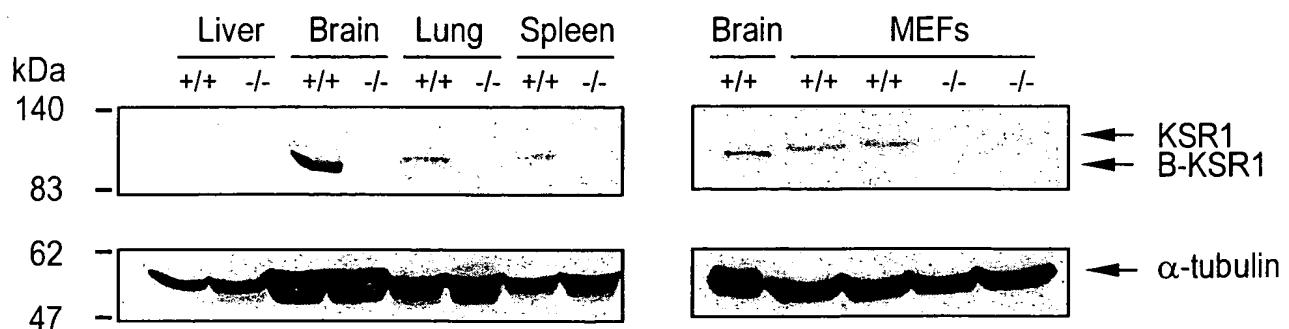


FIG. 2A

a - KSR  $^{+/+}$



FIG. 2B

b - KSR  $^{-/-}$



FIG. 2C

c - KSR  $^{-/-}$

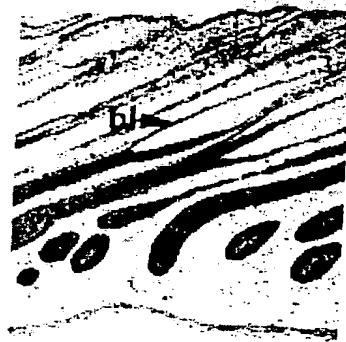


FIG. 2D

d - EGFR  $^{-/-}$

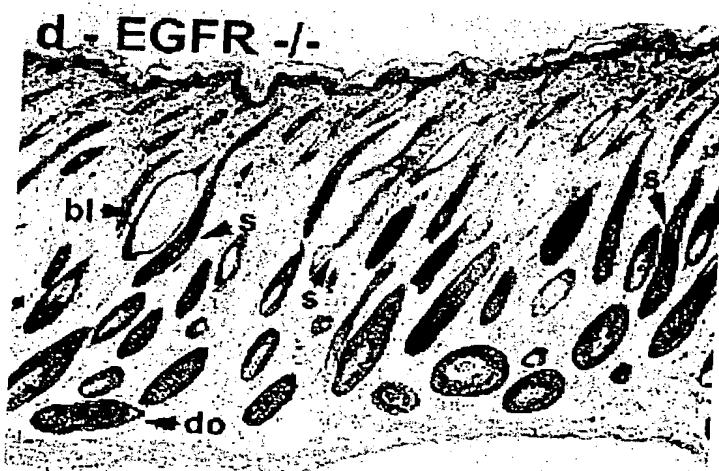
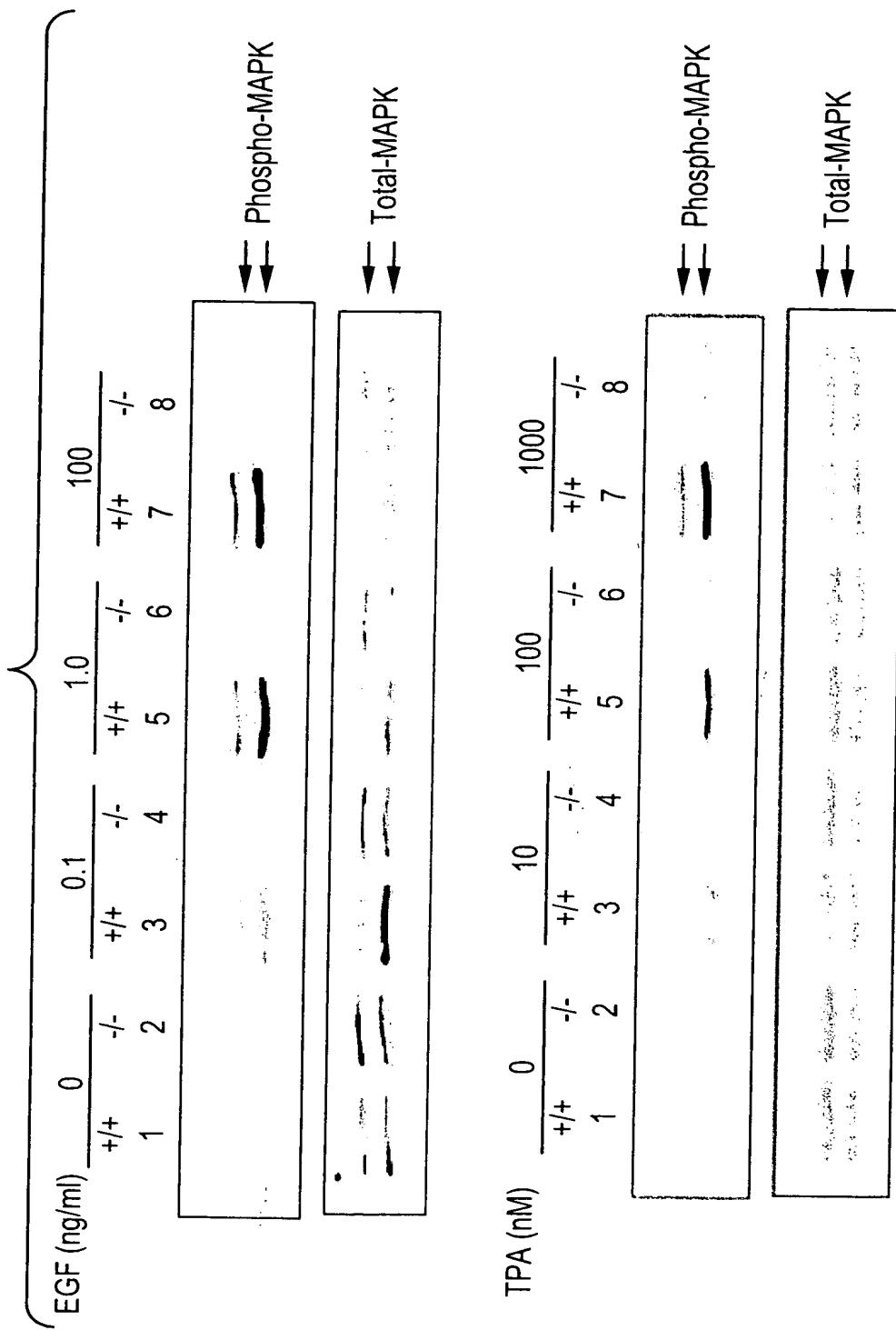
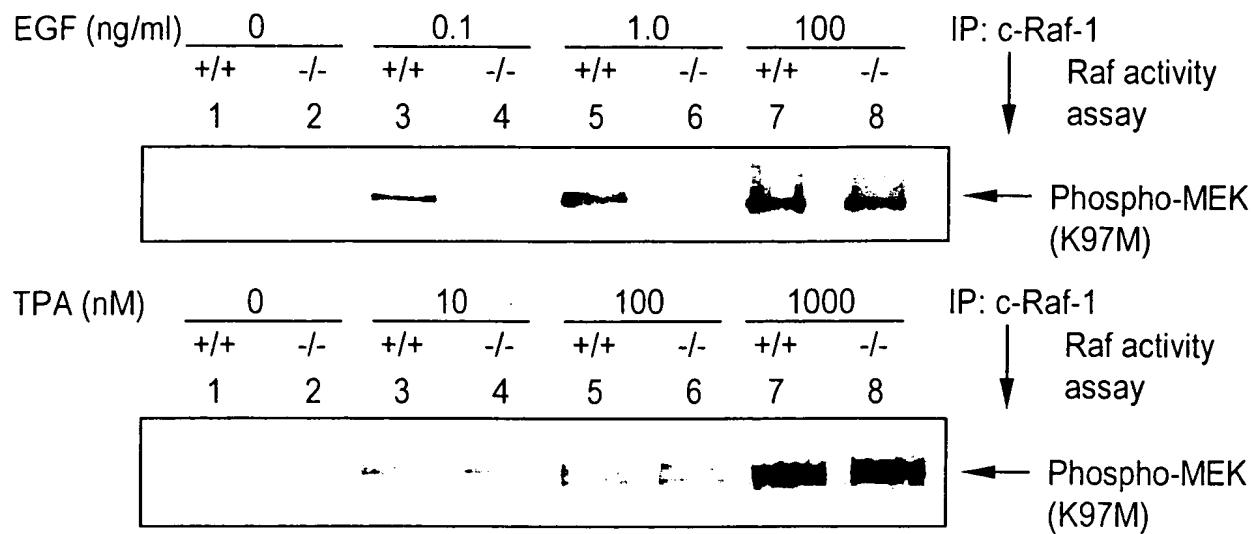


FIG. 3A



## FIG. 3B



## FIG. 3C

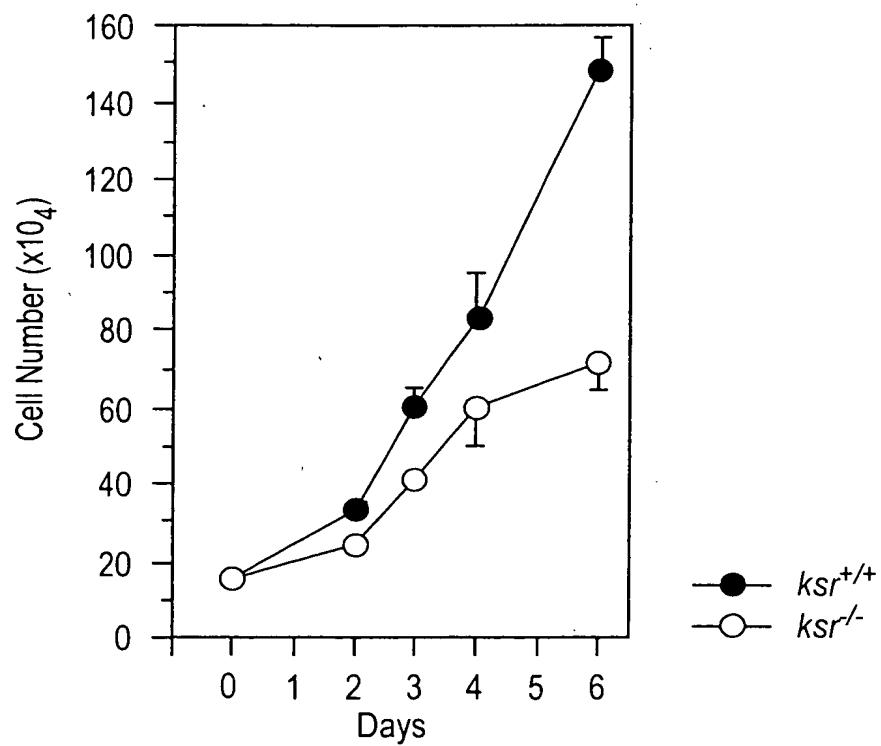


FIG. 4A

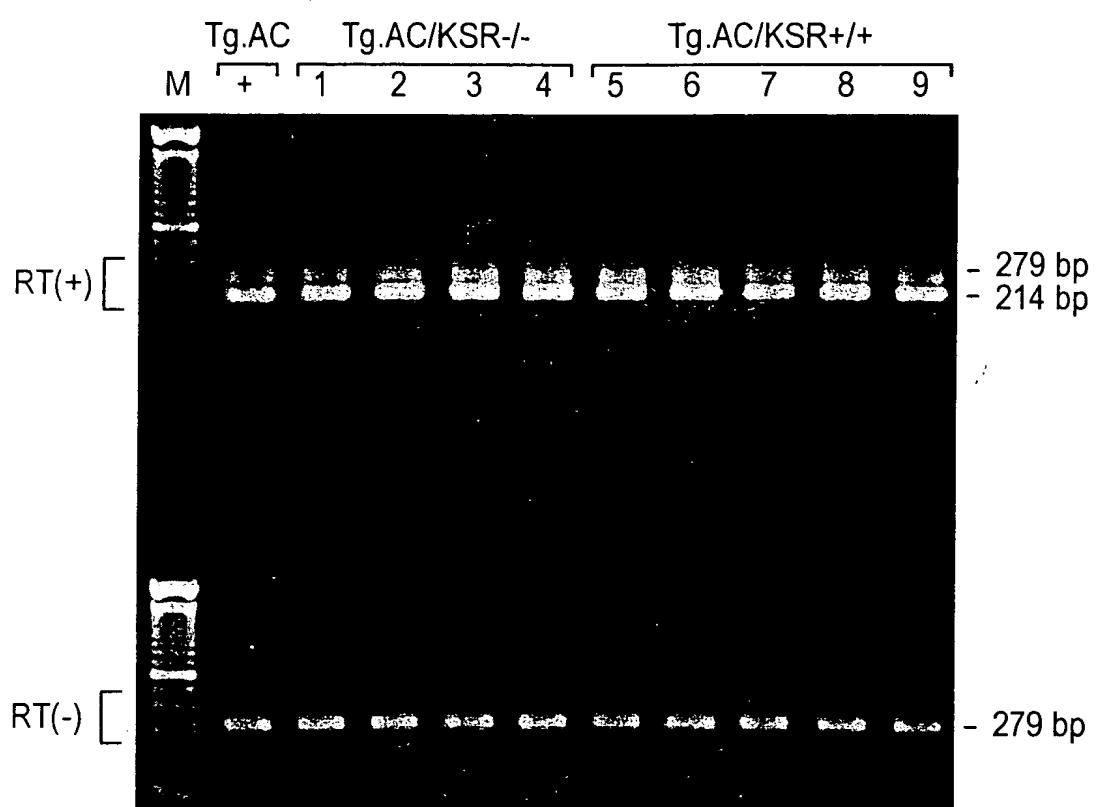
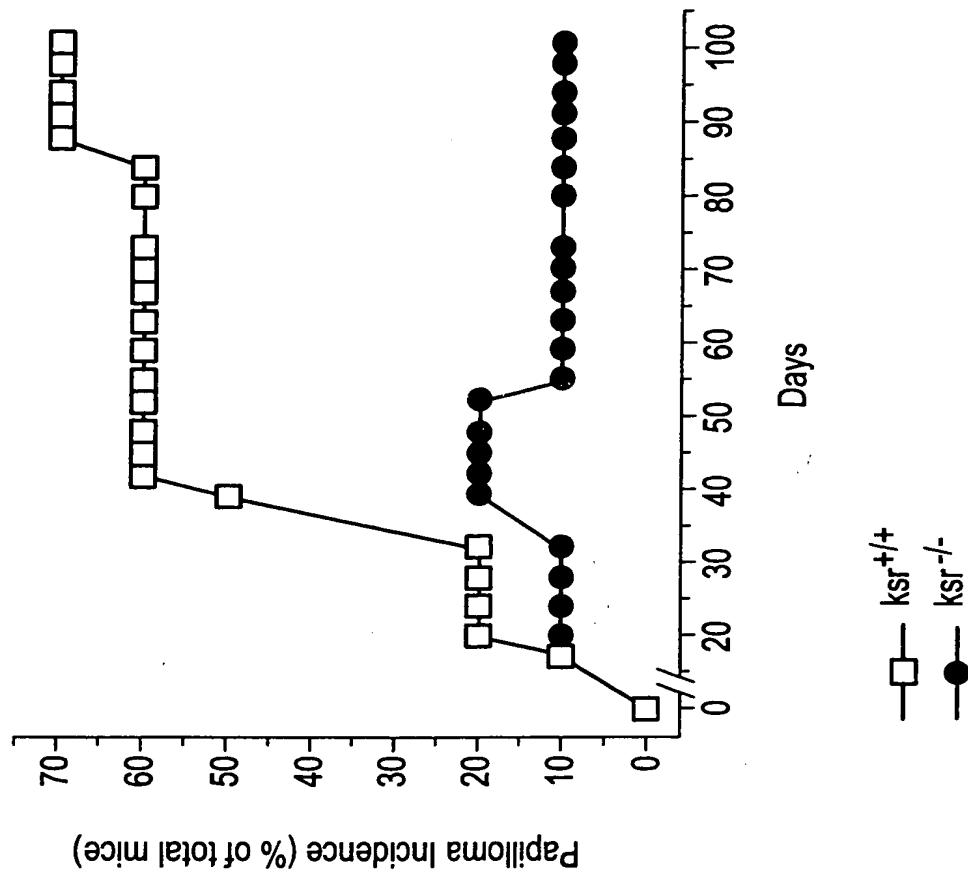
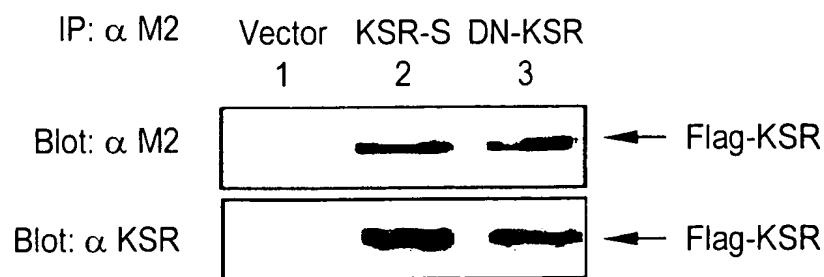


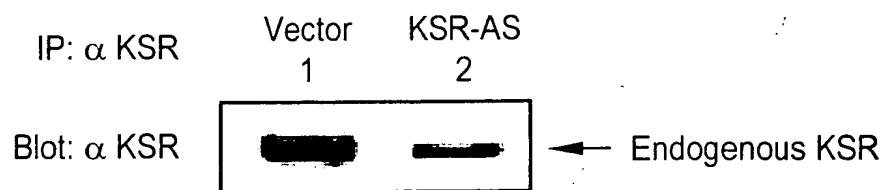
FIG. 4B



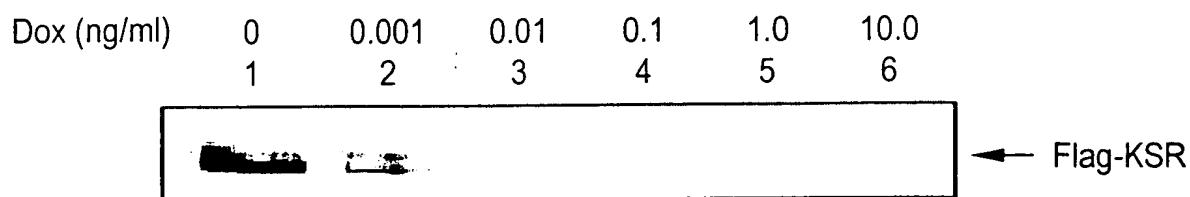
## FIG. 5A



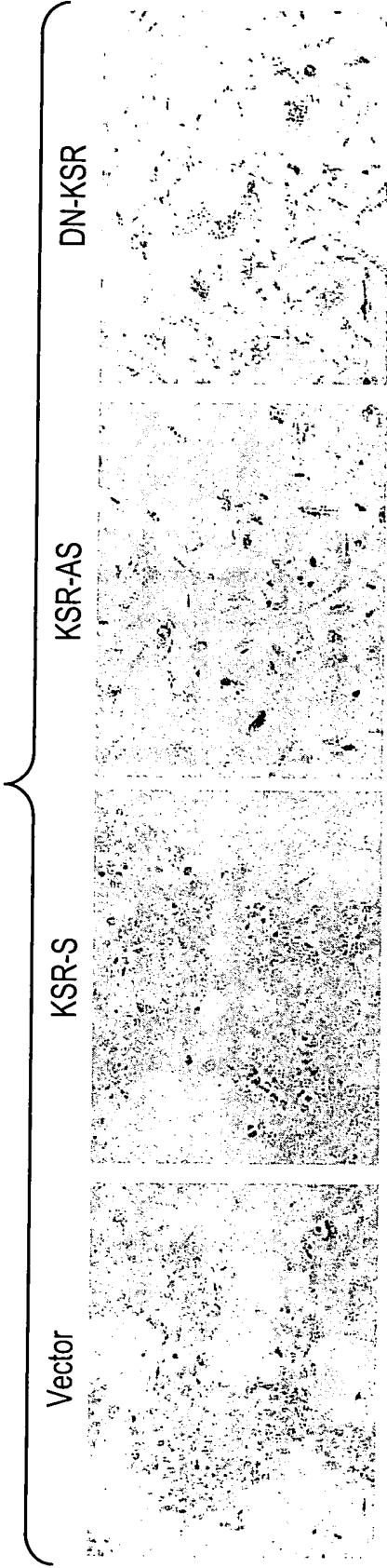
## FIG. 5B



## FIG. 5C



**FIG. 5D**



**FIG. 5E**

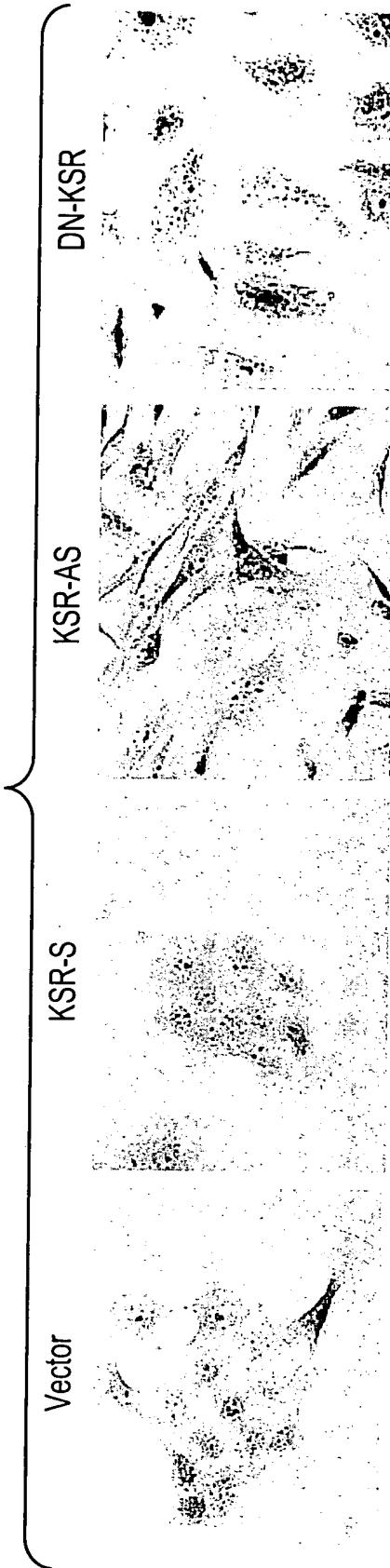
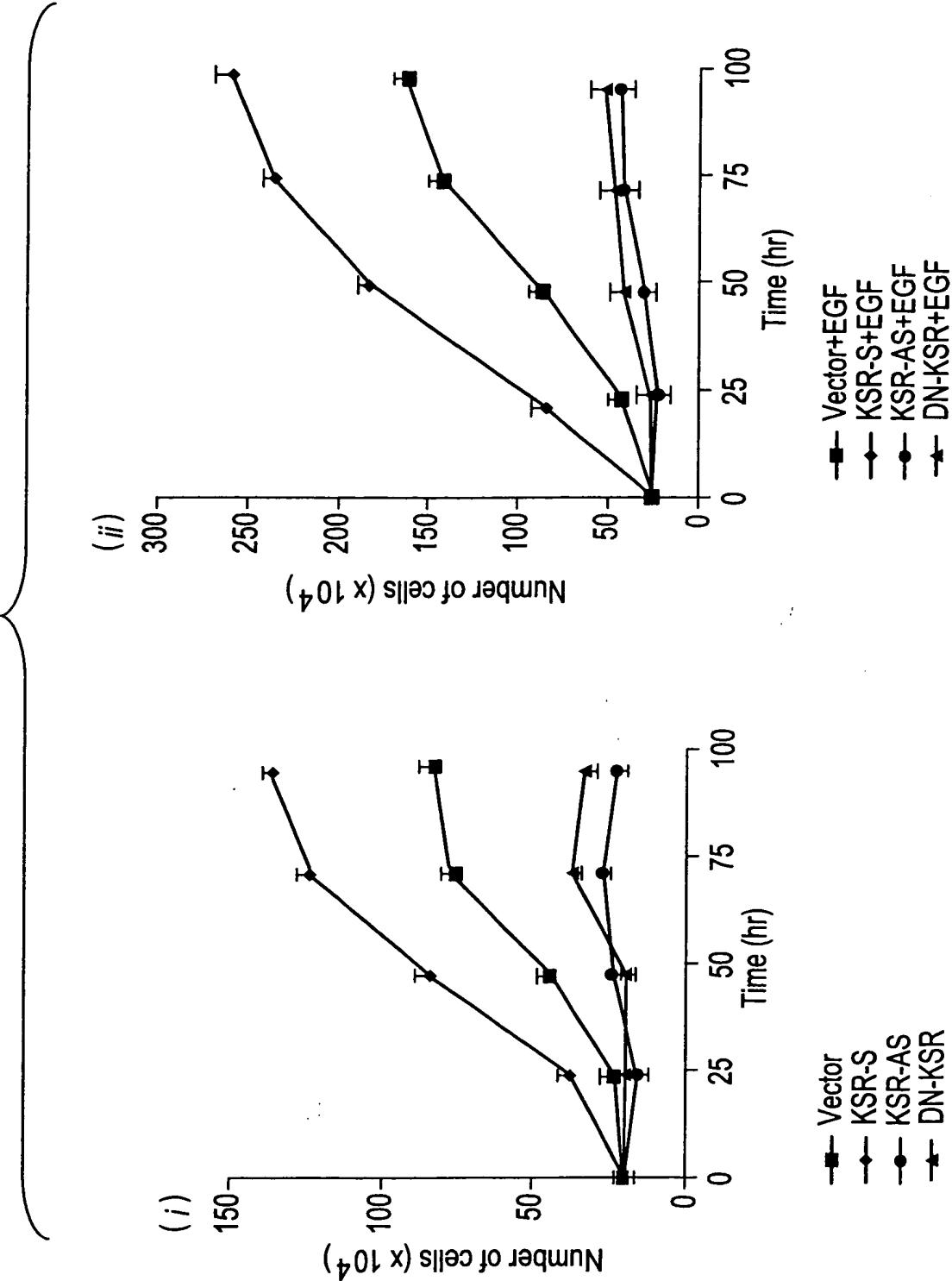


FIG. 6A



**FIG. 6B**

	% G1	% S	% G2
Vector	40.1	45.1	14.8
KSR-S	25.2	60.8	14.0
KSR-AS	16.4	23.2	60.4
DN-KSR	24.2	24.8	51.0

FIG. 6C

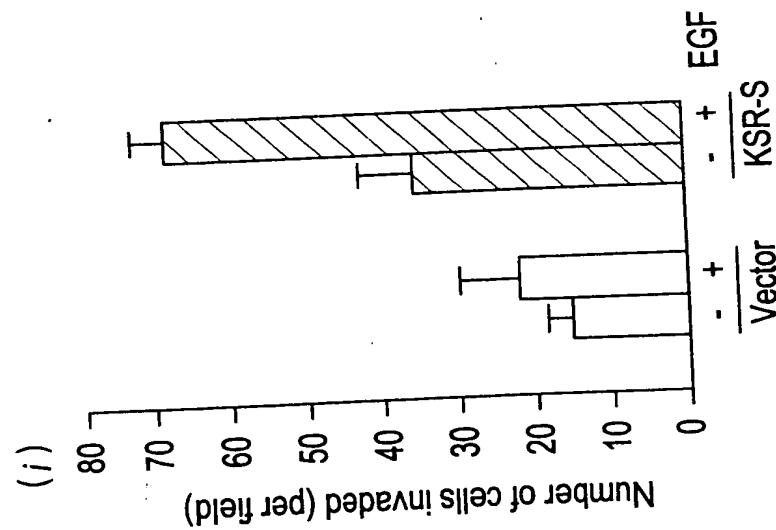


FIG. 6D

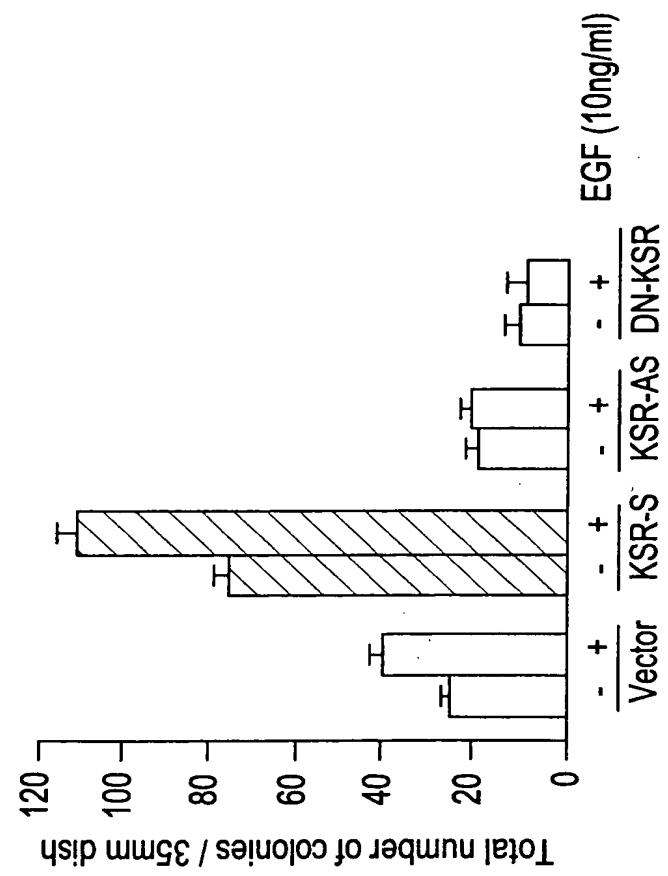


FIG. 7A

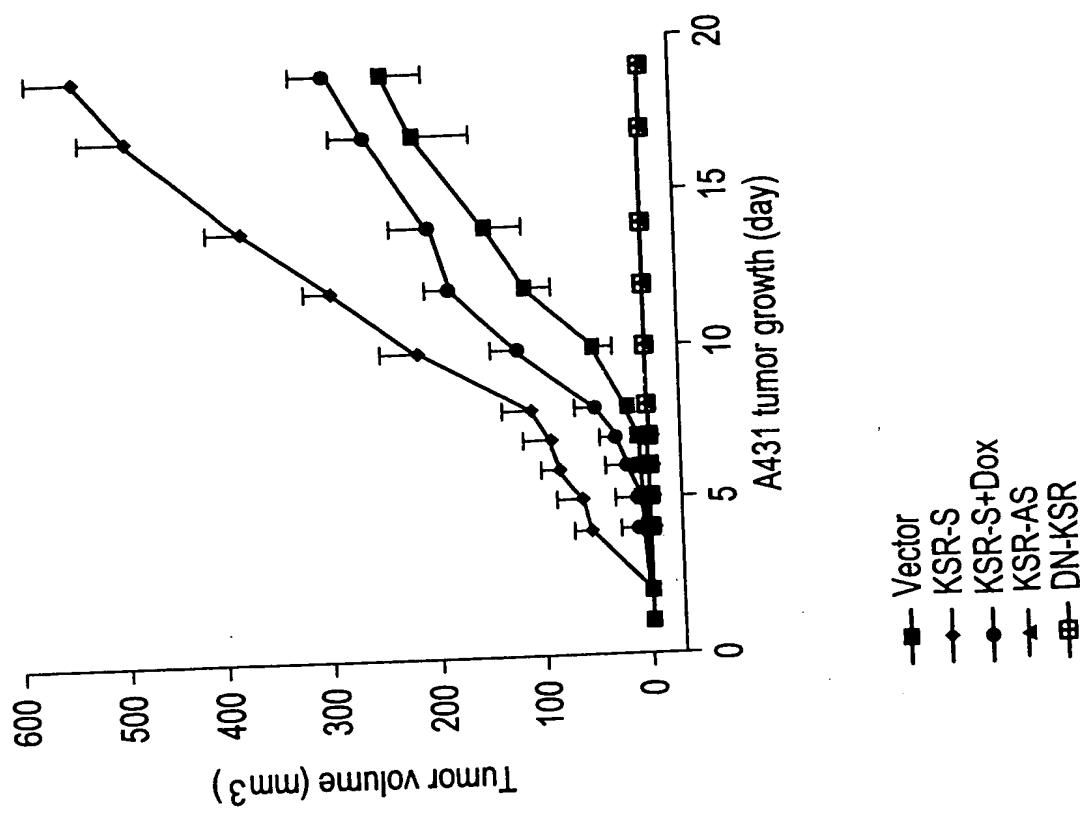


FIG. 7B

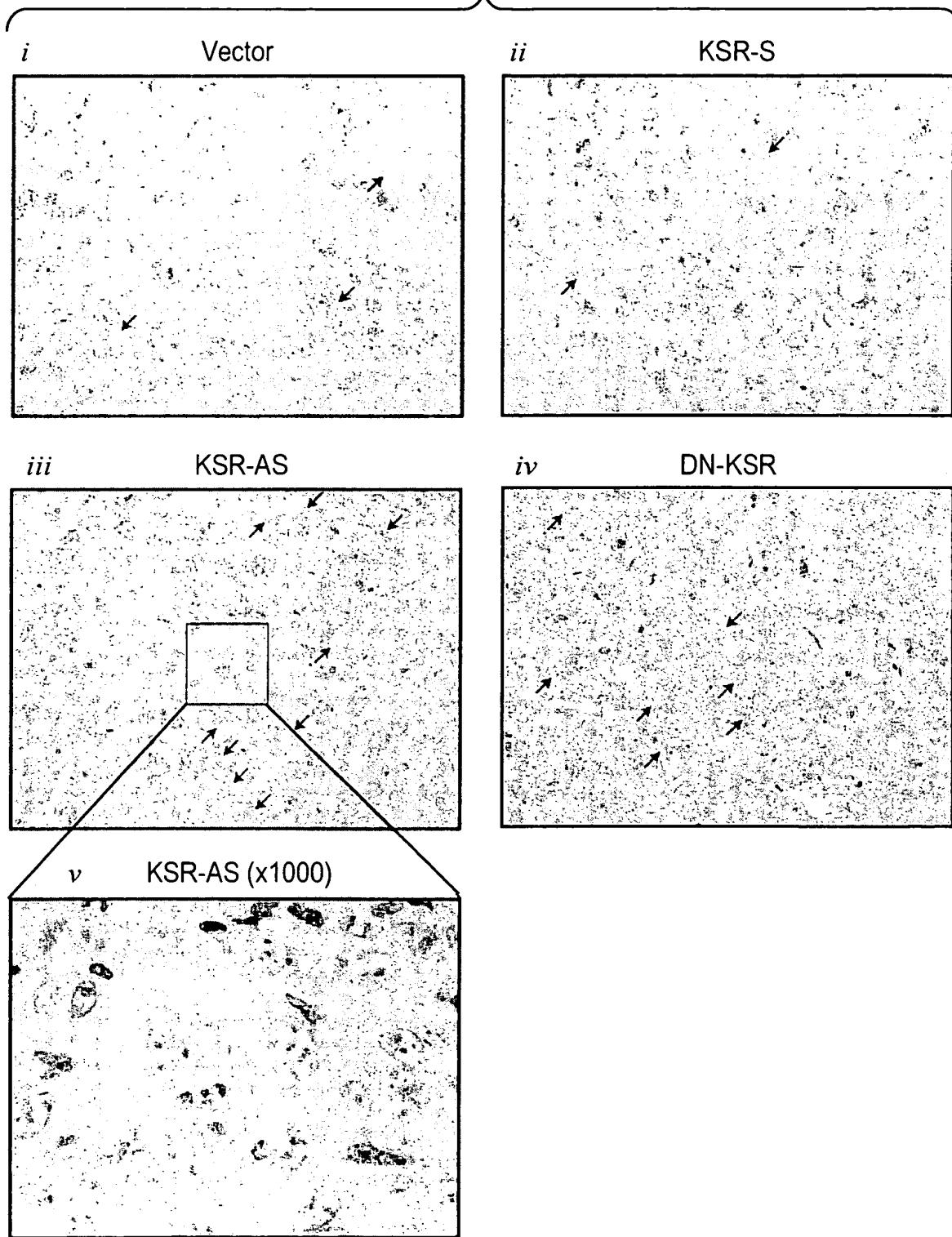


FIG. 8A

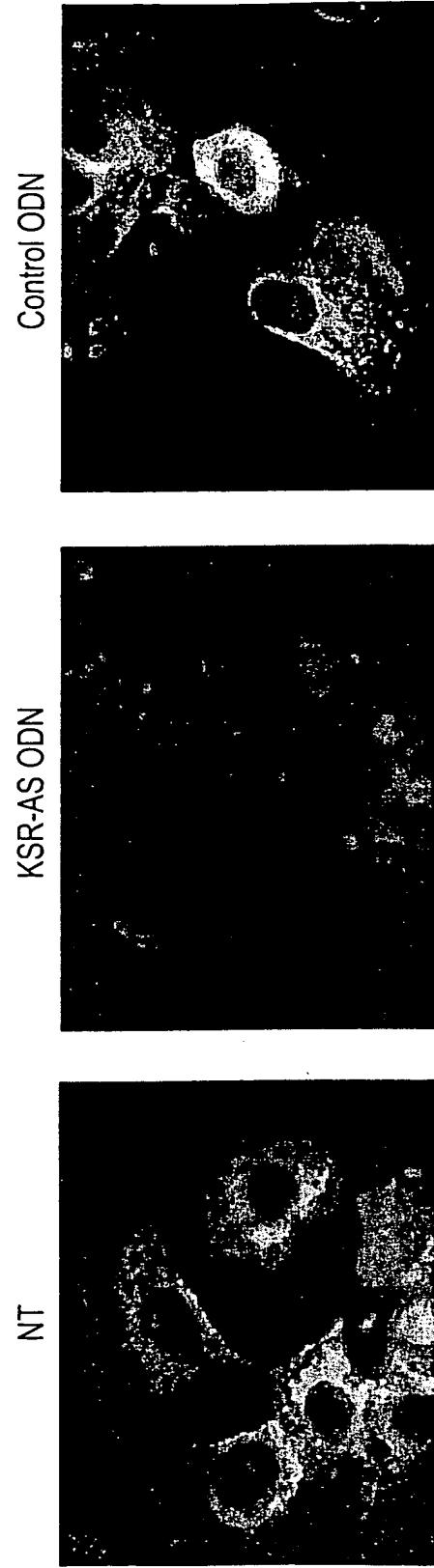


FIG. 8B

FIG. 8C

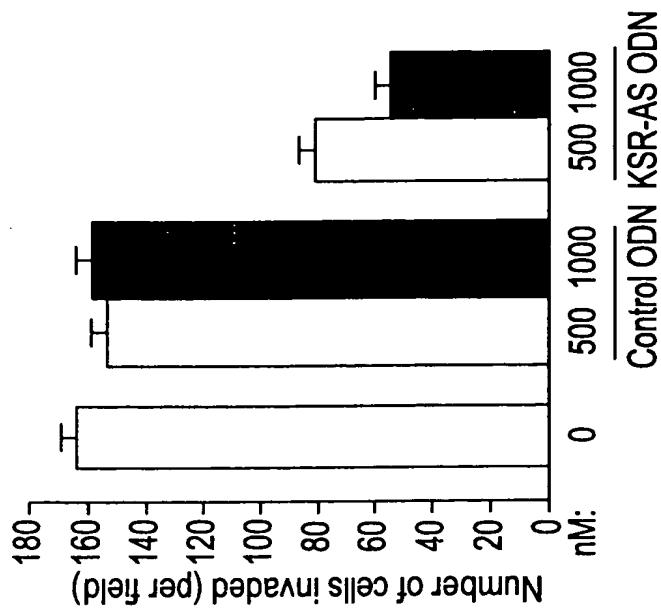
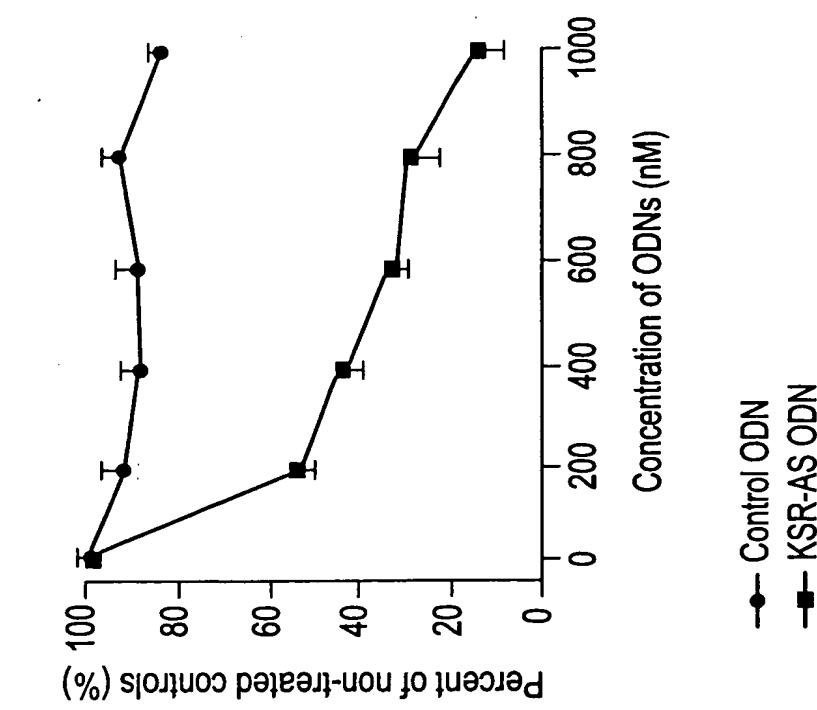
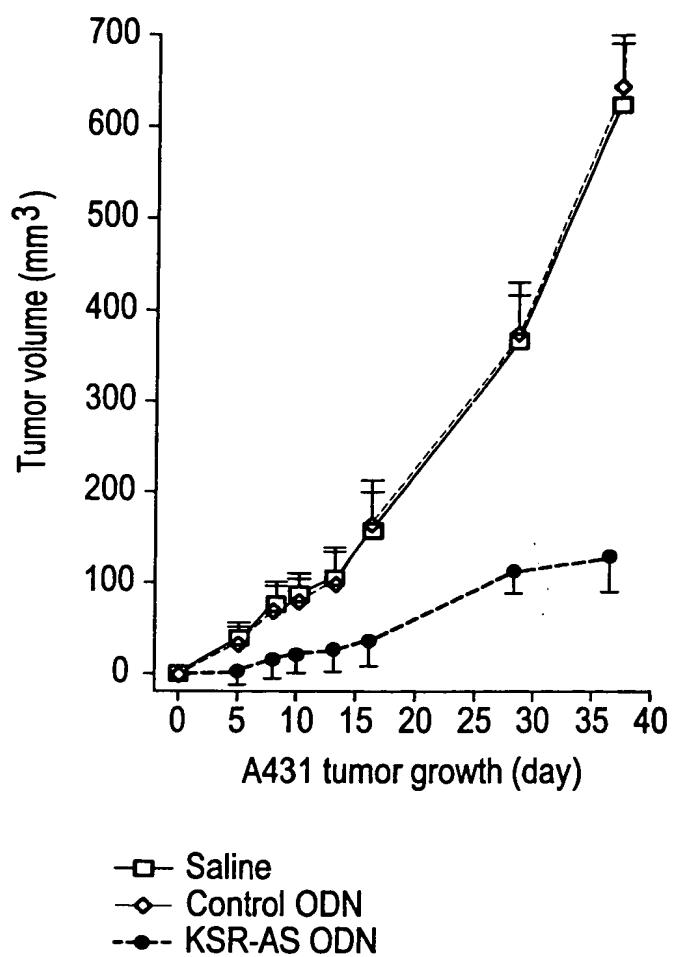
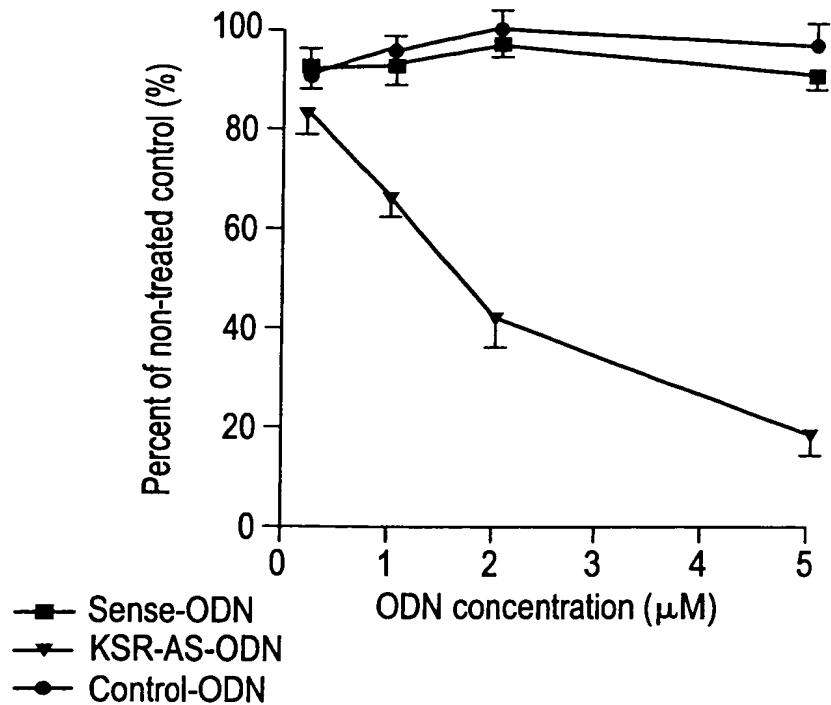


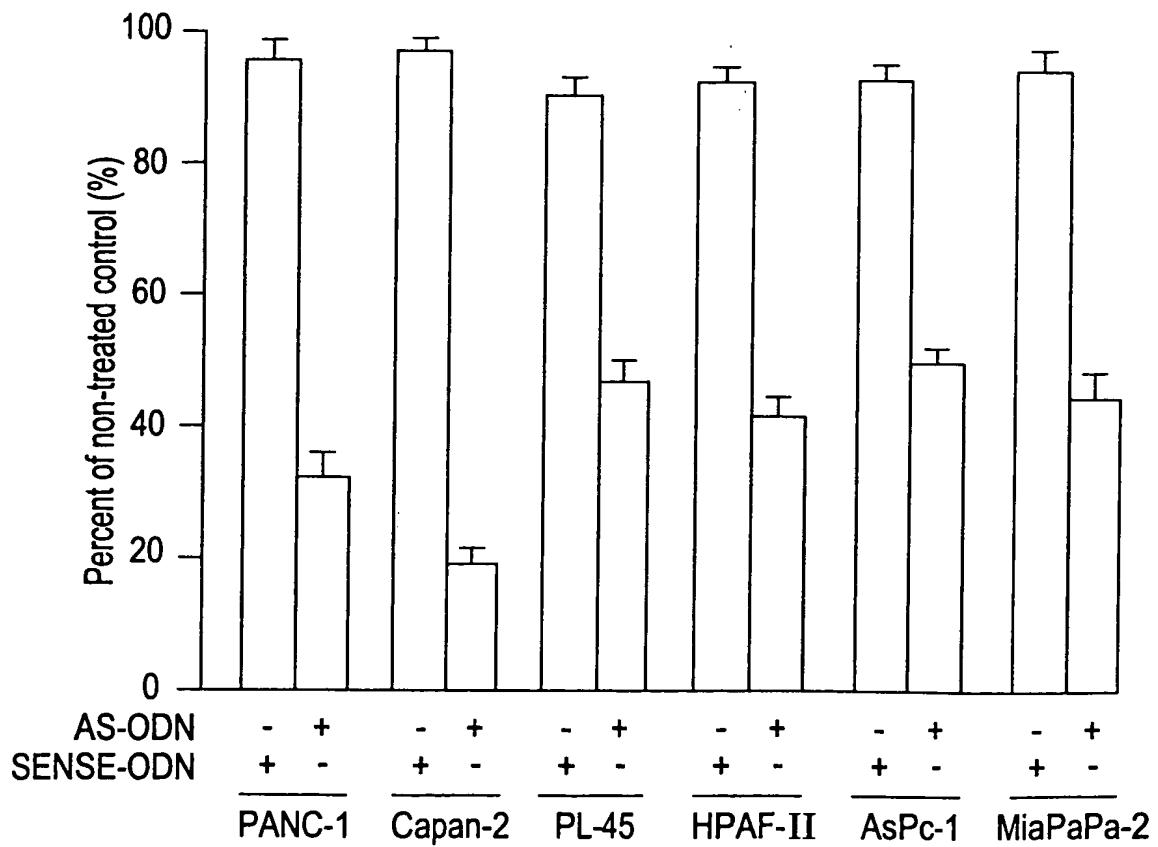
FIG. 8D



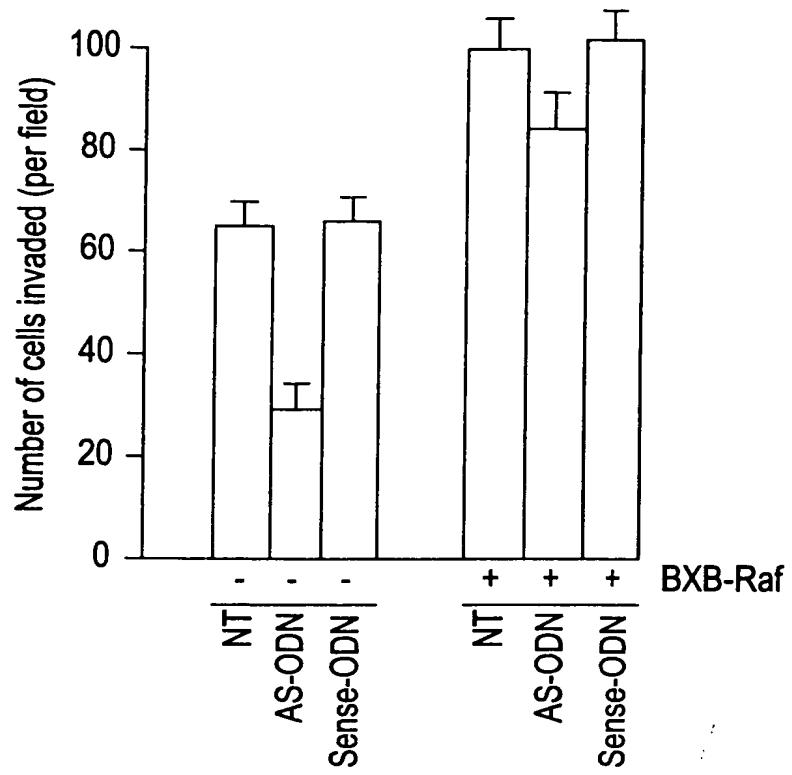
### FIG. 9A



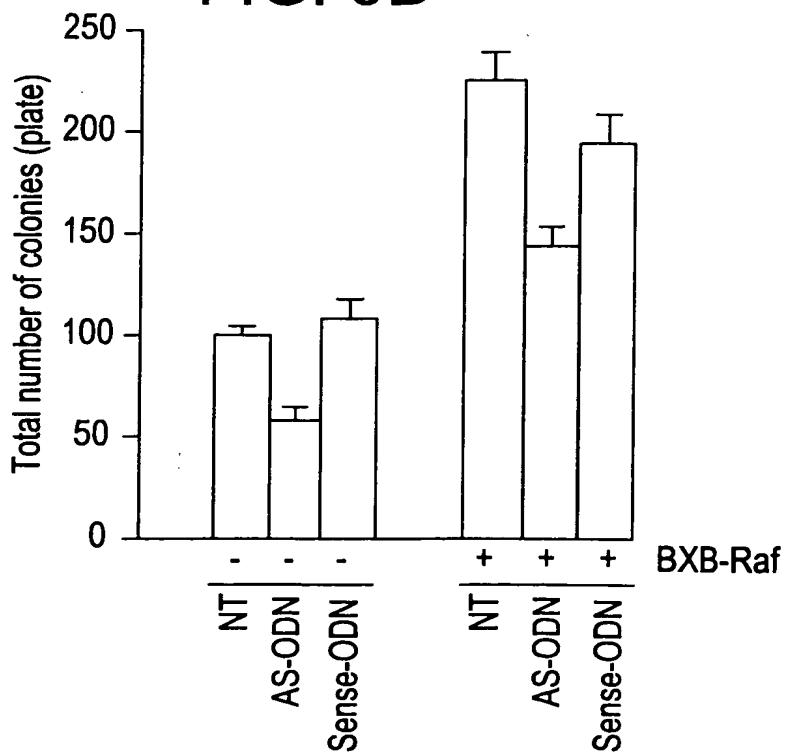
### FIG. 9B



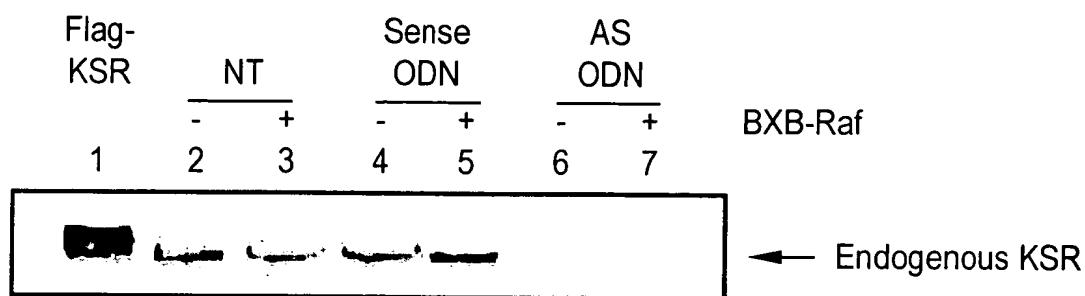
**FIG. 9C**



**FIG. 9D**



## FIG. 9E



## FIG. 9F

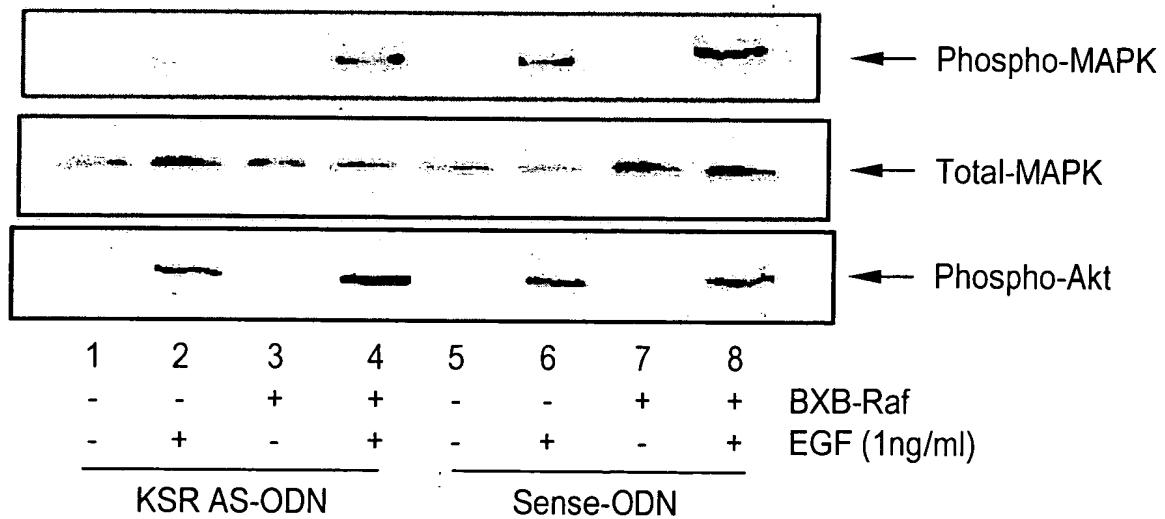


FIG. 10A

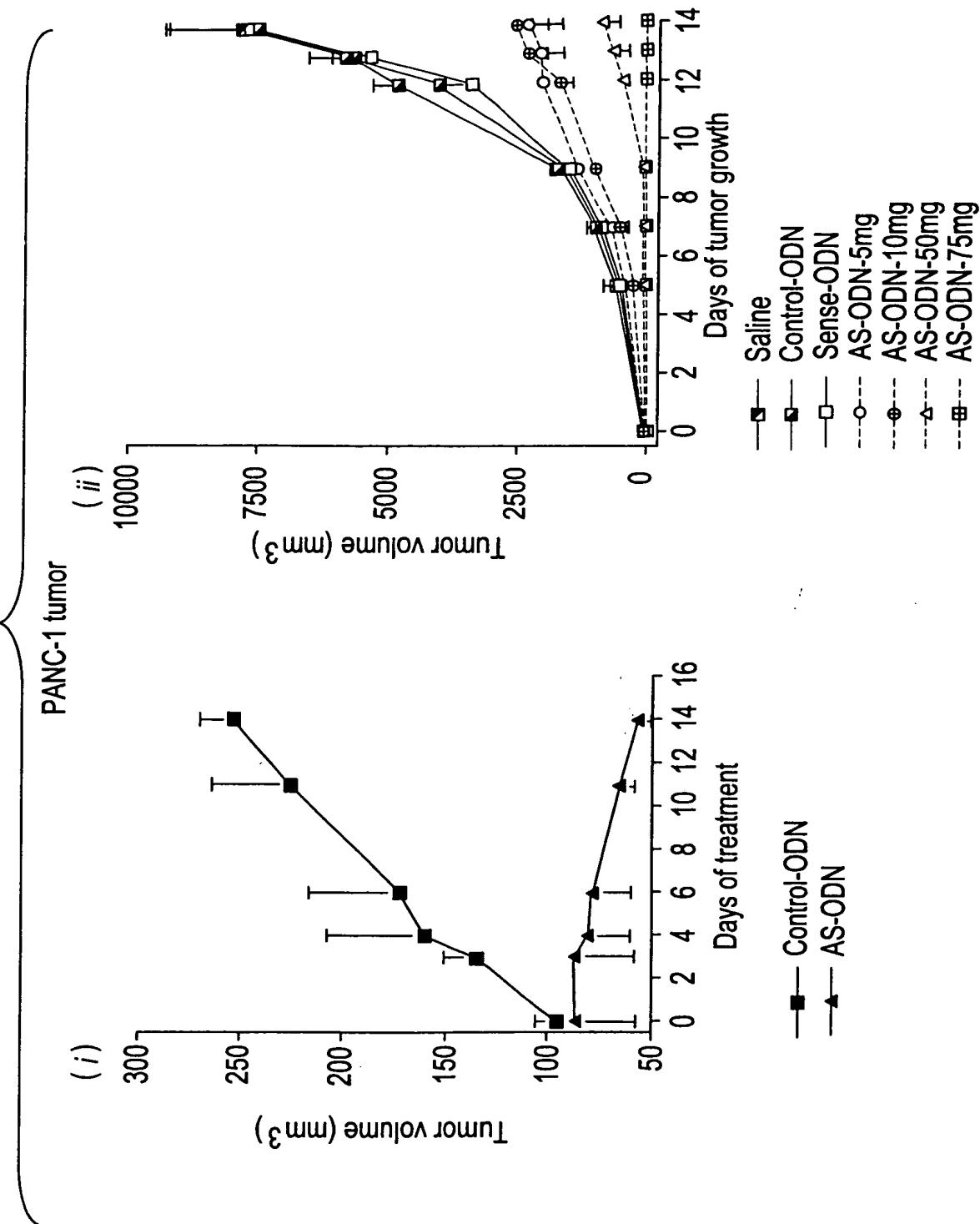


FIG. 10B

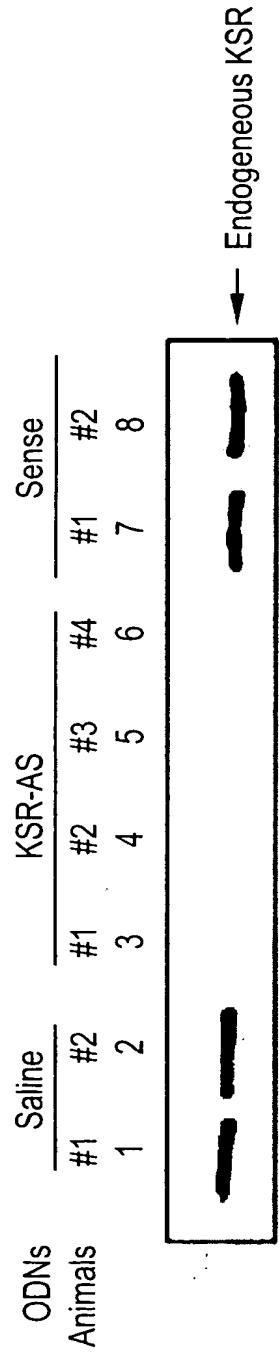


FIG. 10C

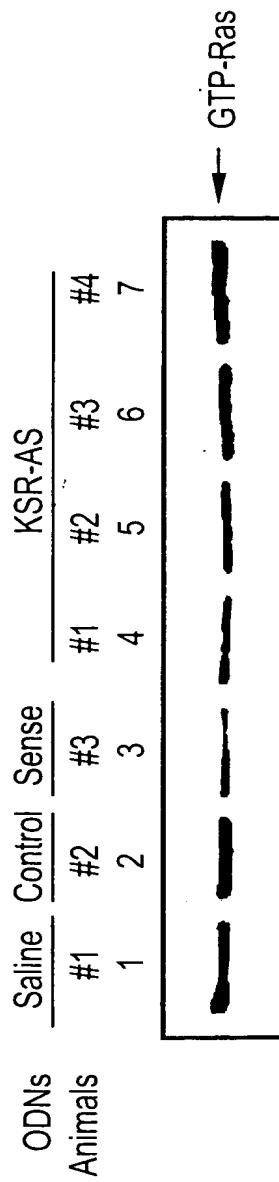
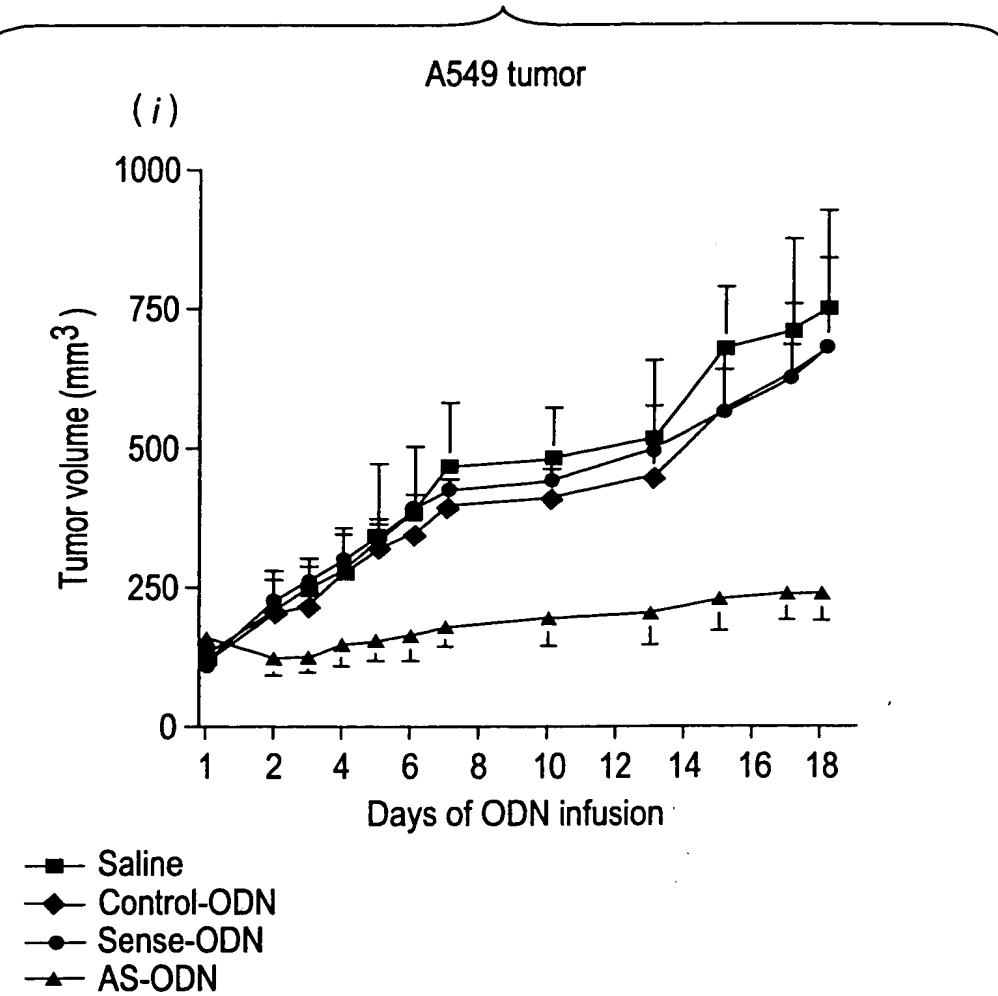


FIG. 10D



(ii) Number of lung metastases foci  
(whole lung surface)

Dose of infusion (mg/ kg /Day)	Sense-ODNs	AS-ODN	% inhibition
10	$7.4 \pm 1.4$	$2.5 \pm 0.6$	65
25	$10.2 \pm 1.8$	$1.4 \pm 0.5$	86

# \* \* \* FIG.11-1

Human MGEK-EGGGGGDAAAEGGAGAAASRALQQCGQLQ 34  
 Mouse MDRAALRAAA K -- V

## CA1

Human KLIDISIGSLRGLRTKCAVSNDLTQQEIRTLEAKLVRYICKQRQC 79  
 Mouse S K Q S

Human KLSVAPGERTPELNSYPRFSDWLYTFNVRPEVVQEIPRDLTLDAL 124  
 Mouse I SD A I QE

Human LEMNEAKVKETLRRCGASGDECGRQYALTCLRKVTLGGEHKED 169  
 Mouse D A M W TE S Q M

Human SSWSSLDARRESGSGPSTDLSAASLPWPPGSQLGRAGNSAQGP 214  
 Mouse G I DS -L PM M S----- A T

Human RSISVSALPASDSPTPSFSEGLSDTCIPLHASGRLTPRALHSFIT 259  
 Mouse V GL S I →

## CA2

Human PPTTPQLRRHTKLKPPRTPPPSRKVFQLLPSFPTLRSKSHE 304  
 Mouse A

Human LGNRIDDVSSMRFDLSHGSPQMVRDIGLSVTHRFSTKSWLSQVC 349  
 Mouse TP K E P L

## CA3

Human HVCQKSMIFGVKCKHCRLKCHNKCTKEAPACRISFLPLTRLRTE 394  
 Mouse N I A

Human SVPSDINNPVDRAAEPHGTLPKALTKKEHPPAMNHLDSSSNPSS 439  
 Mouse -

## CA4

Human TTSSTPSSPAPFPTSSNPSSATTPPNPSPGQRDSRFNFPAAYFIH 484  
 Mouse L S -----

Human HRQQFIFPDISAFAHAAPLPEAADGTRLDDQPKADVLEAHEAEAE 529  
 Mouse ----- CSC SST S I GV

Human EPEAGKSEAEDDED-EVDDLPSSRRPWRGPISRKASQTSVYLQEW 573  
 Mouse ED

## FIG. 11-2

	I	II		
Human	DDIPFEQVELGEPIGQGRWGRVHRGRWHGEVAIRLLEM	DGHNQDH		618
Mouse				
	III	IV	V	
Human	LKLFKKEVMNYRQTRHENVVLFMGACMNPPHLAIITSFCKGRTLH			663
Mouse				
	VIA	VIB		
Human	SFVRDPKTSLDINKTRQIAQEIIKGMGYLHAKGIVHKDLKSKNVF			708
Mouse				
	VII	VIII		
Human	YDNGKVVITDFGLFGISGVVREERRENQLKLSHDWLCLAPEIVR			753
Mouse				
	IX			
Human	EMTPGKDEDQLPFSKAADVYAFGTWYELQARDWPLKNQAAEASI			798
Mouse	I R	F H P L		
	X	XI		
Human	WQIGSGEGMKRVLTSVSLGKEVSEILSACWAFDLQERPSFSLLMD			843
Mouse	VR A G			
Human	MLEKLPKLNRRRLSHPGHFWKSAEL			867
Mouse	R	DINSSKVMRFERFGLGLTLESGN		
Mouse	PKM			

## FIG. 12A-1

1 GAATTCCCTC GGGGCTTTCC TCCCCGAGGG CCCGTGTCCC CGGGCTCCTC GCCTCGGCC  
61 CCAGCGGCC CGATGCCGAG GCATGGATAG AGCGGGCGTG CGCGCGCAG CGATGGCGA  
121 GAAAAAGGAG GGCGGCGGCG GGGGCGCCGC GGCGGACGGG GGCGCAGGGG CCGCCGTCAG  
181 CCGGGCGCTG CAGCAGTGC GGCAGCTGCA GAAGCTCATC GATATCTCCA TCGGCAGTCT  
241 GCGGGGCGTG CGCACCAAGT CCTCACTGTC TAACGACCTC ACACAGCAGG AGATCCGGAC  
301 CCTAGAGGCA AACCTGGTGA AATACATTG CAAGCAGCAG CAGAGCAAGC TTAGTGTGAC  
361 CCCAAGCGAC AGGACCGCCG AGCTCAACAG CTACCCACGC TTCAGTGAATC GGCTGTACAT  
421 CTTCAACGTG AGGCCTGAGG TGGTGCAGGA GATCCCCCAA GAGCTCACAC TGGATGCTCT  
481 GCTGGAGATG GACGAGGCCA AAGCCAAGGA GATGCTGCC CGCTGGGGG CCAGCACGGG  
541 GGAGTGCAGC CGCCTACAGC AAGCCCTTAC CTGCCTTCGG AAGGTGAATC GCCTGGGAGG  
601 GGAGCACAAA ATGGACTCAG GTTGGAGTTC AACAGATGCT CGAGACAGTA GCTTGGGGCC  
661 TCCCATGGAC ATGCTTCCCT CGCTGGGCAG AGCAGGGTGC AGCACTCAGG GACCCCGTTC  
721 CATCTCCGTG TCCGCCCTGC CTGCCTCAGA CTCTCCGGTC CCCGGCCTCA GTGAGGGCCT  
781 CTCGGACTCC TGTATCCCT TGCACACCAG CGGCCGGCTG ACCCCCCGGG CCCTGCACAG  
841 CTTCATCACG CCCCCATCCA CACCCCAGCT ACGACGGCAC GCCAAGCTGA AGCCACCAAG  
901 GACACCCCCA CCGCCAAGCC GCAAGGTCTT CCAGCTGCTC CCCAGCTTCC CCACACTCAC  
961 ACGGAGCAAG TCCCACGAGT CCCAGCTGGG AAACCGAATC GACGACGTCA CCCCGATGAA  
1021 GTTGAACTC CCTCATGGAT CCCCACAGCT GGTACGAAGG GATATCGGGC TCTCGGTGAC  
1081 GCACAGGTTT CTCACAAAGT CATGGTTGTC ACAGGTGTGC AACGTGTGCC AGAAGAGCAT  
1141 GATTTTGCC GTGAAGTGC AACTGCAAG GTTAAAATGC CATAACAAGT GCACAAAGGA  
1201 AGCTCCGCC TGCAGGATCA CCTTCCTCCC ACTGGCCAGG CTTCGGAGGA CAGAGTCTGT  
1261 CCCGTCAAGAT ATCAACAACC CAGTGGACAG AGCAGCAGAG CCCCATTTG GAACCCCTTCC  
1321 CAAGGCCCTG ACAAAAGAAGG AGCACCCCTC AGCCATGAAC CTGGACTCCA GCAGCAACCC  
1381 ATCCTCCACC ACGTCCCTCA CACCCCTCATC GCCGGCACCT TTCCCTGACCT CATCTAATCC  
1441 CTCCAGTGCC ACCACCCCTC CCAACCCGTC ACCTGGCCAGG CGGGACAGCA GGTTCAGCTT  
1501 CCCAGACATT TCAGCCTGTT CTCAGGCAGC CCCGCTGTCC AGCACAGCCG ACAGTACACG  
1561 GCTCGACGAC CAGCCCCAAA CAGATGTGCT AGGTGTTCAC GAAGCAGAGG CTGAGGAGGCC  
1621 TGAGGCTGGC AAGTCAGAGG CAGAGGATGA CGAGGAGGAT GAGGTGGACG ACCTCCCCAG  
1681 CTCCCGCCGG CCCTGGAGGG GCCCCATCTC TCGAAAGGCC AGCCAGACCA CCGTTTACCT  
1741 GCAAGAGTGG GACATCCCT TTGAACAGGT GGAACCTGGG GAGCCATTG GACAGGGTCG  
1801 CTGGGGCCGG GTGCACCGAG GCCGTTGGCA TGGCGAGGTG GCCATTCCGC TGCTGGAGAT  
1861 GGACGGCCAC AATCAGGACC ACCTGAAGCT GTTCAAGAAA GAGGTGATGA ACTACCGGGCA  
1921 GACGCGGCAT GAGAACGTGG TGCTCTTCAT GGGGGCCTGC ATGAACCCAC CTCACCTGGC  
1981 CATTATCACC AGCTCTGCA AGGGGCGGAC ATTGCATTCA TTCGTGAGGG ACCCCAAGAC  
2041 GTCTCTGGAC ATCAATAAGA CTAGGCAGAT CGCCCGAGGAG ATCATCAAGG GCATGGGTTA  
2101 TCTTCATGCA AAAGGCATCG TGCACAAGGA CCTCAAGTCC AAGAATGTCT TCTATGACAA  
2161 CGGCAAAGTG GTCATCACAG ACTTCGGGCT GTTGGGATC TCGGGTGTGG TCCGAGAGGA  
2221 ACGGCGCGAG AACCAACTGA AACTGTCACTA TGACTGGCTG TGCTACCTGG CCCCCCGAGAT  
2281 CGTACGAGAA ATGATCCCGG GGCAGGGACGA GGACCAAGCTG CCCTTCTCCA AAGCAGCCGA  
2341 TGTCTATGCA TTCGGGACTG TGTGGTATGA ACTACAGGCA AGAGACTGGC CCTTTAAGCA  
2401 CCAGCCTGCT GAGGCCCTGTA TCTGGCAGAT TGGAAAGTGGG GAAGGAGTAC GGCAGCTCCT  
2461 GGCATCCGTC AGCCTGGGGAG AGGAAGTGG CGAGATCCTG TCTGCCTGCT GGGCTTTCGA  
2521 TCTGCAGGAG AGACCCAGCT TCAGCCTGCT GATGGACATG CTGGAGAGGC TGGCCAAAGCT  
2581 GAACCGGGGG CTCTCCACC CTGGGCACCTT TTGGAAGTGC GCTGACATTA ACACCAAGCA  
2641 AGTCATGCC CGTTTGAAA GGTTGGCCT GGGGACCTG GAGTCCGGTA ATCCAAAGAT

## FIG. 12A-2

2701 GTAGCCAGCC CTGCACGTTTC ATGCAGAGAG TGTCTTCCTT TCGAAAACAT GATCACGAAA  
2761 CATGCAGACC ACCACCTCAA GGAATCAGAA GCATTGCATC CCAAGCTGCG GACTGGGAGC  
2821 GTGTCTCCTC CCTAAAGGAC GTGCGTGCCT GCCTGCGTGC GTGCGTGCCT GCGTGCCTCA  
2881 CCAAGGTGTG TGAGCTCAG GATCGCAGCC ATACACGCAA CTCCAGATGA TACCACTACC  
2941 GCCAGTGTGTT ACACAGAGGT TTCTGCCTGG CAAGCTTGGT ATTTTACAGT AGGTGAAGAT  
3001 CATTCTGCAG AAGGGTGCTG GCACAGTGGA GCAGCACGGG TGTCCTCCAGC CCCCCTCTG  
3061 GAAGACCCCTA CAGCTGTGAG AGGCCAGGG TTGAGCCAGA TGAAAGAAAA GCTGCGTGGG  
3121 TGTGGGCTGT ACCCGGAAAAA GGGCAGGTGG CAGGAGGTTT GCCTTGGCCT GTGCTTGGG  
3181 CGAGAACCCAC ACTAAGGAGC AGCAGCCTGA GTTAGGAATC TATCTGGATT ACGGGGATCA  
3241 GAGTCCCTGG AGAGTGGACT CAGTTCTGC TCTGATCCAG GCCTGTTGTG CTTTTTTTT  
3301 TTCCCCCTTA AAAAAAAAAGTACAGACA GAATCTCAGC GGCTTCTAGA CTGATCTGAT  
3361 GGATCTTAGC CCGGCTTCTA CTGCGGGGGG GAGGGGGGGG GGGATAGCCA CATATCTGTG  
3421 GAGACACCCA CTTCTTATC TGAGGCTCC AGGTAGGCAC AAAGGCTGTG GAACTCAGCC  
3481 TCTATCATCA GACACCCCCC CCCAATGCCT CATTGACCCC CTTCCCCCAG AGCCAAGGGC  
3541 TAGCCCATCG GGTGTGTGA CAGTAAGTTC TTGGTGAAGG AGAACAGGGG CGTTGGCAGA  
3601 ACCAGTTGAG AGTGGCCCTA GCATCTTAAA ACCATTGTC TGTCACACCA GAAGGTTCTA  
3661 GACCTACCAC CACTCCCTT CCCCATCTCA TGGAAACCTT TTAGCCCATT CTGACCCCTG  
3721 TGTGTGCTCT GAGCTCAGAT CGGGTTATGA GACCGCCAG GCACATCAGT CAGGGAGGCT  
3781 CTGATGTGAG CGCAGACCT CTGTGTTCAT TCCTATGAGC TGGAGGGGCT GGAAGTGGTG  
3841 GGGTCAGATG TGCTTGGCAG GAACTGTCAG CTGCTGAGCA GGGTGGTCCC TGAGCGGAGG  
3901 ATAAGCAGCA TCAGACTCCA CAACCAGAGG AAGAAAGAAA TGGGGATGGA GCGGAGACCC  
3961 ACGGGCTGAG TCCCGCTGTG GAGTGCCTT GCAGCTCCCT CTCAGTTAAA ACTCCCAGTA  
4021 AAGCCACAGT TCTCCGAGCA CCCAAGTCTG CTCCAGCCGT CTCTTAAAC AGGCCACTCT  
4081 CTGAGAAGGA ATT

## FIG. 12B-1

1       GCGAAGCTGG TCCGTACAT TTGTAAGCAG AGGCAGTGCA AGCTGAGCGT GGCTCCCGGT  
61      GAGAGGACCC CAGAGCTCAA CAGCTACCCC CGCTTCAGCG ACTGGCTGTA CACTTTCAAC  
121     GTGAGGCCGG AGGTGGTGC A GGAGATCCCC CGAGACCTCA CGCTGGATGC CCTGCTGGAG  
181     ATGAATGAGG CCAAGGTGAA GGAGACGCTG CGGGCCTGTG GGGCCAGCGG GGATGAGTGT  
241     GGCCGTCTGC AGTATGCCCT CACCTGCCCT CGGAAGGTGA CAGGCCCTGGC TTCACTCACCC  
301     CGCCCCACCAC ACCCCAGCTG CGACGGCACA CCAAGCTGAA GCCACCAACGG ACGCCCCCCCC  
361     CACCCAGCCG CAAGGTCTTC CAGCTGCTGC CCAGCTTCCC CACACTCACC CGGAGCAAGT  
421     CCCATGAGTC TCAGCTGGGG AACCGCATG ATGACGTCTC CTCGATGAGG TGAGTTGGGA  
481     GCACGTTCCCT GCACGTGGCT ATGCTGTGGG GCCTCTCTCA TGAGTCAGAG CGGAGGGAGA  
541     CAGCTGTGCC TCTGGAGTCT GCTTTAATT GTCTGGAAAT GCAGAGATGT CTGGTTTTTG  
601     CCTGAGCAAA ATAGGAGTT ATTTTTGTAC TATCCCAGGC TGGCTAAGGA GAGTCACGTA  
661     GCTGTGGGG GGGTCTTGGG GATGAGGAGG GGTACACGAG GCAGGGACTA TGCTGAAGTG  
721     GAGCTGGCTG TAGGAACCCC AGGGAGGCAC AGGGGGAGCA TGAAGAGGAG CTACACTTCC  
781     CTCCCCTAGT GCCCGGGCAG AAACCTCCAG GGCCTTCAC AGAACCTTGG AGGAACATTC  
841     AACACCCCCA TCTCTAGGAC AGCCCCAGCC TTGTCATCCT CCAATTGCTG TGGTAACACG  
901     GGGACTGGAG CAGTGAGATT ATTAGGCCCT CAGGGCCAGT GTCTCCATGC AGATCAGATG  
961     GAGGCGGTGC TTGGCACATA CACCACCTCA CTGCCCATGC CCCCAGAAGT TGGTGCAGAT  
1021    CATAAGGTGG CTTTTGGGGC TAATTGATTG AAGTCCAAC ATAGTCTGTT TCTCCTAGGC  
1081    TGGTAGCTGG CACCTTGCC CCCATGTGTT TTTTAATTAT TTTTCTTTT GAGACGAAAT  
1141    CTCGCTCTAT CACCCAGGCT GAAGTGCAGT AGTGCATCT CAGCTCACTG CAGCCTCTGC  
1201    CTCCCGGGTT CAAGCAATT TCCTGCCCTCA GCCTCCCGAG TAGCCACGGAT TAAAGGTGCC  
1261    TGCACCACCA CATGGCTAAT TTTGTATT TTAATAGAGA CGGGGTTTCA CCATGTTAGC  
1321    CAGGCTGGTC TCAAACCTCT GACCTCAGGT GATCTCTG CCTCAGCCTC CCAAAGTGCT  
1381    GGGATTACAG GTGTGAGCCA CTGCGCCAG TCATGCCCAT GTGTTTGGT GGTCTTGGCT  
1441    GCTGATGGGT GGGGTGAGCC CCAGGAGGAA GTTGGGACAA GTCAACCTCA TGGCAGATGT  
1501    GCCAGGGAGA GCTGCCGGTG AGATAGATTG TTCCATATCCC CCTCTCCTTG ATGTGGGAGG  
1561    ACTCAGTACC TCCAGCACAC CCTTCTCATG GAGGTGGTT ATGTGGTACT TGGCCTCAAG  
1621    TGAACCAGCA CTTCATGAGT CCAGCTTTGT GCTAGACCAAG CACTTGGGAT TGAGGGGGC  
1681    AGTGGCCACC CTCGGGGAC CTTCTGACTC AGAGGACATG AGATGGCCAC ACTCGAGCAC  
1741    TGTGTTCTG ACCTTTCTGG GTCACAGGTC ACCTTGATGA TTGGATGAAA GTCTTAGATC  
1801    TTCTTTCCAG AGAAAAGTCT ACAACATTCT ACTGAACCAAG TCCAGAGGGT TCCCAGACCC  
1861    CCGAAGCCCA CCCATGGCT GGCTCTGGG A GGCAATGGCG CTGAGTATGG GGGCATCTCT  
1921    CGCATGGATC CCCACAGATG GTACGGAGGG ATATCAGGGCT GTCGGTGACG CACAGGTTCT  
1981    CCACCAAGTC CTGGCTGTC CAGGTCTGCC ACAGTGTGCCA GAAGAGCATG ATATTGGAG  
2041    TGAAGTGC A GCATTGCAGG TTGAAGTGTG ACAACAAATG TACCAAAGAA GCCCCTGCC  
2101    GTAGAATATC CTTCTGCCA CTAACCTGGC TTCGGAGGAC AGAATCTGTC CCCTCGGACA  
2161    TCAACAAACCC GGTGGACAGA GCAGCCGAAC CCCATTGG AACCCTCCCC AAAGCACTGA  
2221    CAAAGAAGGA GCACCCCTCCG GCCATGAATC ACCTGGACTC CAGCAGCAAC CCTTCCTCCA  
2281    CCACCTCCTC CACACCCCTCC TCACCGGGCGC CCTTCCCGAC ATCATCCAAC CCATCCAGCG

## FIG. 12B-2

2341 CCACCACGCC CCCCAACCCC TCACCTGGCC AGCGGGACAG CAGGTTCAAC TTCCCAGCTG  
2401 CCTACTTCAT TCATCATAGA CAGCAGTTA TCTTCCAGA CATTTCAGCC TTTGCACACG  
2461 CAGCCCCGCT CCCTGAAGCT GCGGACGGTA CCCGGCTCGA TGACCAAGCCG AAAGCAGATG  
2521 TGTTGGAAGC TCACCGAAGCG GAGGCTGAGG AGCCAGAGGC TGGCAAGTCA GAGGCAGAAG  
2581 ACGATGAGGA CGAGGTGGAC GACTTGCCGA GCTCTGCCG GCCCTGGCGG GCCCCCACATCT  
2641 CTCGCAAGGC CAGCCAGACC ACCGTGTACC TGCAGGAGTG GGACATCCCC TTGAGCAGG  
2701 TAGAGCTGGG CGAGCCCCATC GGGCAGGGCC GCTGGGGCCG GGTGCACCGC GGCGCTGGC  
2761 ATGGCGAGGT GGCCATTCGC CTGCTGGAGA TGGACGGCCA CAACCAGGAC CACCTGAAGC  
2821 TCTTCAGGAA AGAGGTGATG AACTACCGGC AGACGCGGCA TGAGAACGTG GTGCTTTCA  
2881 TGGGGGCCTG CATGAACCCG CCCCACCTGG CCATTATCAC CAGCTTCTGC AAGGGGCGGA  
2941 CGTTGCACTC GTTTGTGAGG GACCCCAAGA CGTCTCTGGA CATCAACAAG ACGAGGCAAA  
3001 TCGCTCAGGA GATCATCAAG GGCATGGGAT ATCTTCATGC CAAGGGCATC GTACACAAAG  
3061 ATCTCAAATC TAAGAACGTC TTCTATGACA ACGGCAAGGT GGTCAATCACA GACTTCGGC  
3121 TGTTTGGGAT CTCAGGCGTG GTCCGAGAGG GACGGCGTGA GAACCAGCTA AAGCTGTCCC  
3181 ACGACTGGCT GTGCTATCTG GCCCCCTGAGA TTGTACGCGA GATGACCCCC GGGAAAGGACG  
3241 AGGATCAGCT GCCATTCTCC AAAGCTGCTG ATGTCTATGC ATTTGGGACT GTTTGGTATG  
3301 AGCTGCAAGC AAGAGACTGG CCCTTGAAGA ACCAGGCTGC AGAGGCATCC ATCTGGCAGA  
3361 TTGGAAGCGG GGAAGGAATG AAGCGTGTCC TGACTTCTGT CAGCTTGGG AAGGAAGTCA  
3421 GTGAGATCCT GTCGGCCTGC TGGGCTTTCG ACCTGCAGGA GAGACCCAGC TTCAGCCTGC  
3481 TGATGGACAT GCTGGAGAAA CTTCCCAAGC TGAACCGGCG GCTCTCCAC CCTGGACACT  
3541 TCTGGAAGTC AGCTGAGTTG TAGGCCTGGC TGCCTTGCAT GCACCAGGGG CTTTCTTCCT  
3601 CCTAATCAAC AACTCAGCAC CGTGAATTCT GCTAAAATGC AAAATGAGAT GCGGGCACTA  
3661 ACCCAGGGGA TGCCACCTCT GCTGCTCCAG TCGTCTCTCT CGAGGCTACT TCTTTGCTT  
3721 TGTTTAAAAA ACTGGCCCTC TGCCCTCTCC ACGTGGCCTG CATATGCCA AG

FIG. 13A

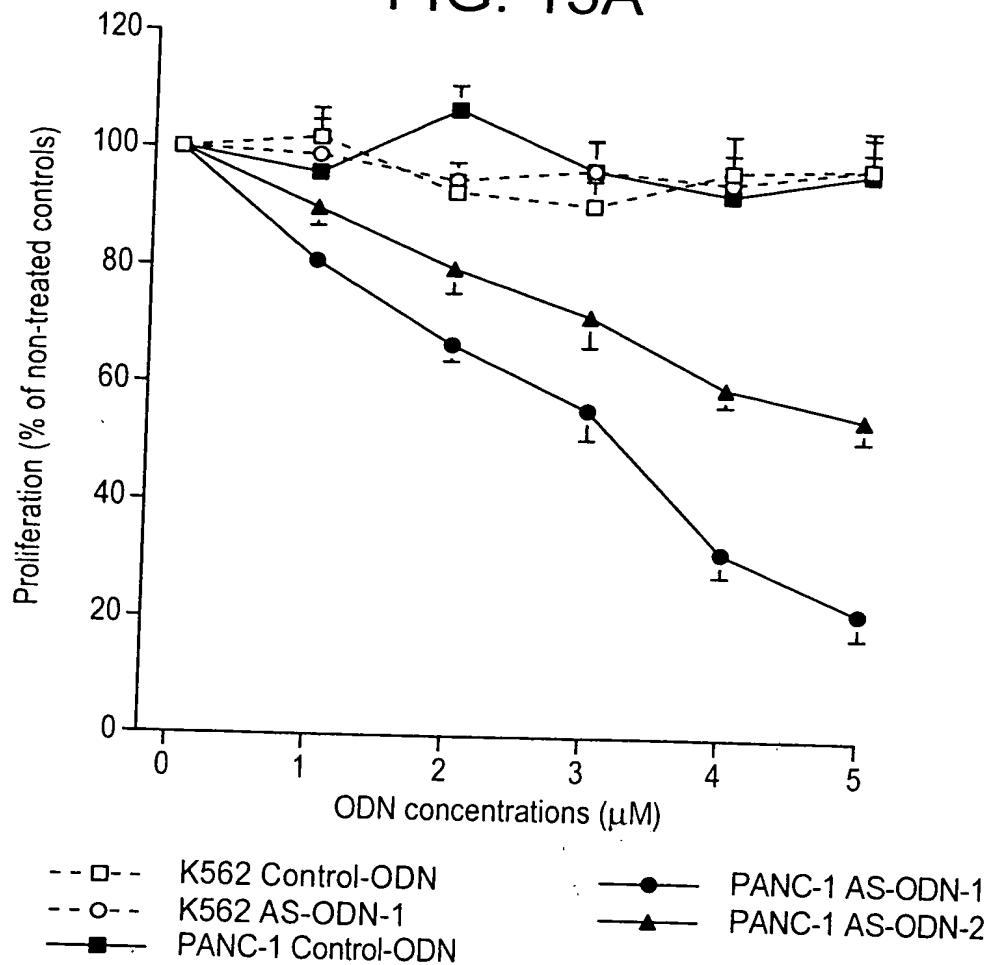


FIG. 13B

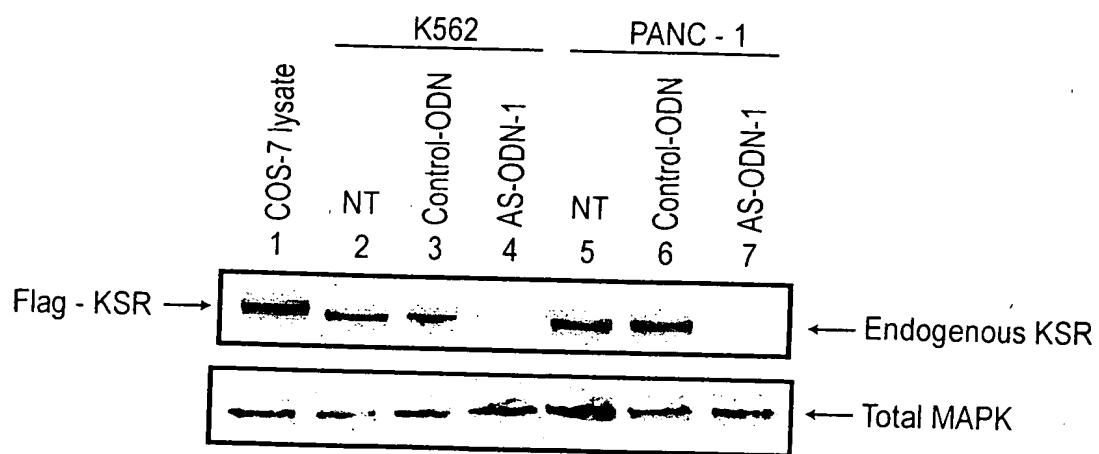


FIGURE 14

1 atgggagaga aggagggcgg tggcggggg gatgcggcgg ccgcggaggg tggcgaggg  
60 gccgcggcca gccgggcgtc gcagcagtgt gggcagctcc agaagctcat cgacatctcc  
120 atcggcagtc tgcgcggct ggcaccaag tgcgcagtgt ctaacgaccc caccacgg  
180 gagatacggc ccctagaggc aaagctggc cttacattt gtaagcagag gcagtgc  
240 ctgagcgtgg ctccggta gaggaccca gagctcaaca gtcaccccg cttagcgac  
300 tggctgtaca ctttcaacgt gaggccggag gtggtcagg agatccccc agacccac  
360 ctggatgccc tgctggagat gaatgaggcc aaggtaagg agacgctgcg gcgcgtgg  
420 gccagcgggg atgagtgtgg ccgtctgcag tatgcctca ctcgcctgcg gaaggtgaca  
480 ggcctggag gggagcacaa ggaggactcc agttggagtt cattggatgc gcggcggaa  
540 agtggctcag ggccttcac ggacaccctc tcagcagcca gcctgcctc gcgcgcgg  
600 agctcccgac tggcgagac aggcaacagg gcccaggggc cagcgtccat ctccgtgtca  
660 gctctggcc cctcagactc ccccacccca agttcagtg agggcctctc agacacctgt  
720 attccccgtc acgcccggc cggctgacc cccctgtccc tgcacagctt catcaccccg  
780 cccaccacac cccagctgcg acggcacacc aagctgaagc caccacggac gcgcgcgc  
840 cccagccgca aggtcttcca gctgctgccc agttccca cactcaccgg gagcaagtcc  
900 catgagtctc agctgggaa ccgcattgtat gacgtctctt cgatgaggtt tgatctctg  
960 catggatccc cacagatgtt acggaggat atcgggtgtt cggtgacgca cagttctcc  
1020 accaagtctt ggctgtcgca ggtctgccac gtgtgccaga agagcatgtt atttggagtg  
1080 aagtgcagc attgcagtt gaagtgtcac aacaaatgtt ccaaagaagc ccctgcctgt  
1140 agaatatctt tcctgcact aactcggctt cggaggacag aatctgtccc ctcggacatc  
1200 aacaacccgg tggacagac agccgaaccc cattttggaa ccctcccaa agcaactgaca  
1260 aagaaggagc accctccggc catgaatcac ctggactcca gcagcaaccc ttccctccacc  
1320 acctcctcca caccctcctc accggcgccc ttcccgacat catccaaccc atccagcgcc  
1380 accacgcccc ccaacccctc acctggccag cggacagca gttcaactt cccagctgcc  
1440 tacttcattt atcatagaca gcagtttac tttccagaca tttcagccct tgcacacgca  
1500 gcgcgcgtcc ctgaagctgc cgacggtacc cggctcgatg accagccgaa agcagatgt  
1560 ttggaaagctc acgaagcgga ggctgaggag ccagaggctg gcaagtgcaga ggcagaagac  
1620 gatgaggacg aggtggacga cttggcgac ttcgcgcgc cctggcgaaa cccatctct  
1680 cgcaaggcca gccagaccc cgtgtaccc caggagtggg acatccctt cgaggcaggta  
1740 gagctggcg agccatcg gcagggccgc tggggccggg tgcaccgcgg ccgcgtggcat  
1800 ggcgagggtgg ccattcgct gctggagatg gacggccaca accaggacca cctgaagctc  
1860 ttcaagaaag aggtgtatgaa ctaccggcag acgcggcatg agaacgttgt gtccttcatt  
1920 ggggcctgca tgaacccggc ccacctggcc attatcacca gttctgcac gggcgacg  
1980 ttgcacttgt ttgtgaggga ccccaagacg tctctggaca tcaacaagac gaggcaatc  
2040 gctcaggaga tcatcaaggg catggatattt cttcatgcca agggcatgtt acacaaagat  
2100 ctcaaatcta agaacgtctt ctatgacaac ggcaagttt tcatcacaga ctccggctg  
2160 tttggatct caggcgttgtt ccgagaggga cggcgtgaga accagctaaa gtcgtccac  
2220 gactggctgt gctatctggc ccctgagatt gtacgcgaga tggggccgg gaaggacgag  
2280 gatcagctgc cattctccaa agctgctgtat gtctatgcat ttggactgt ttggatgag  
2340 ctgcaagcaa gagactggcc cttgaagaac caggcgtcag aggcacccat ctggcagatt  
2400 ggaagcgggg aaggaatgaa gcgtgtcctg acttctgtca gcttggggaa ggaagtcgt  
2460 gagatcctgt cggcctgctg ggcttcgac ctgcaggaga gacccagctt cagcctgctg  
2520 atggacatgc tggagaaact tcccaagctg aaccggcggc tctcccaccc tggacacttc  
2580 tggaaagtca ctgagttgtat g

**FIGURE 15**

atgggagagaaggaggcgggtggcgggggatgcggcgccggagggtggcgaggg  
M G E K E G G G G D A A A A E G G A G 20

gccgcggccagccggcgctgcagcagtgtggcagctccagaagctcatcgacatctcc  
A A A S R A L Q Q C G Q L Q K L I D I S 40  
**CA1 (32-72)**

atccggcagtcgcccgggtgcgcaccaagtgcgcagtgctaaacgacatcaccagg  
I G S L R G L R T K C A V S N D L T Q Q 60  
**AS-ODN3 (42-47)** **AS-ODN2 (52-57)**

gagatacggaccctagaggcaaaagctggtcgttacattttaagcagaggcagtgc  
E I R T L E A K L V R Y I C K Q R Q C K 80  
**AS-ODN1 (63-68)**

ctgagcgtggctcccggttagagggacccagagctcaacagctaccccgcttcagcgac  
L S V A P G E R T P E L N S Y P R F S D 100

tggctgtacacttcaacgtgaggccggaggtggcaggagatcccccagac  
W L Y T F N V R P E V V Q E I P R D L T 120

ctggatgcccgtggagatgaatgaggccaaggtaaggagacgctgcggcgctgtgg  
L D A L L E M N E A K V K E T L R R C G 140

gccagcggggatgagtggtggccgtctgcagtatgcccacctgcctgcggaaagg  
A S G D E C G R L Q Y A L T C L R K V T 160

ggcctggggggggggcacaaggaggactccagttggagttcattggatgcgcggggaa  
G L G G E H K E D S S W S S L D A R R E 180

agtggctcaggccctccacggacaccctctcagcagccagcctggcccccagg  
S G S G P S T D T L S A A S L P W P P G 200

agctcccagctggcagaggcaggcaacagcggccaggcccacgctccatctccgtgtca  
S S Q L G R A G N S A Q G P R S I S V S 220

gctctgcccgcctcagactcccccccccagcttcagtgaggcctctcagacac  
A L P A S D S P T P S F S E G L S D T C 240

attccccctgcacgccagcggccggctgaccccccgtgcacagcttcaccccg  
I P L H A S G R L T P R A L H S F I T P 260

cccaccacacccagctgcgacggcacaccaagctgaagccaccacggacggccccc  
P T T P Q L R R H T K L K P P R T P P P 280

cccagcccaaggcttccagctgcccagcttccccacactcacccggagcaagtcc  
P S R K V F Q L L P S F P T L T R S K S 300  
**CA2 (277-289)**

catggatctcagctggggaaaccgcattgtatgcgtctccgtatgggttgc  
H E S Q L G N R I D D V S S M R F D L S 320

catggatccccacagatggtacggaggatatcgggtgtcggtacgcacagg  
H G S P Q M V R R D I G L S V T H R F S 340

accaagtccctggctgtcgccaggctgcacgtgtgcagaagagcatgatattgg  
T K S W L S Q V C H V C Q K S M I F G V 360  
**CA3 (335-380)**

aagtgcacaggattgcagggttgcaggatgtgcacaacaaatgtaccaaa  
K C K H C R L K C H N K C T K E A P A C 380

**FIGURE 15 (cont'd)**

agaatatccttcctgccactaactcggcttcggaggacagaatctgtcccctcgacatc  
R I S F L P L T R L R R T E S V P S D I 400

aacaacccgggtggacagagcagccgaacccatttggAACCCCTCCCCAAAGCAGTACA  
N N P V D R A A E P H F G T L P K A L T 420

aagaaggaggcaccctccggccatgaatcacctggactccagcagcaacccctccacc  
K K E H P P A M N H L D S S S N P S S T 440

acccctccacaccctccatccggccctccgacatcatccaacccatccagcgcc  
T S S T P S S P A P F P T S S N P S S A 460  
**CA4 (432-498)**

accacgccccccaacccctcacctggccagcgggacacagcagggtcaacttcccagctgcc  
T T P P N P S P G Q R D S R F N F P A A 480

tacttcattcatcatagacagcagtttatctttccagacatttcagccttgcacacgca  
Y F I H H R Q Q F I F P D I S A F A H A 500

gccccgctccctgaagctgccgacggtaaccggctcgatgaccagccgaaagcagatgt  
A P L P E A A D G T R L D D Q P K A D V 520

ttgaaagctcacgaaggcgaggctgaggagccagaggctggcaagtcagaggcagaagac  
L E A H E A E E P E A G K S E A E D 540

gatgaggacgagggtggacacttgcgagctctcgccggccctggcgccccatctct  
D E D E V D D L P S S R R P W R G P I S 560

cgcaggccagccagaccagcgtgtacctgcaggagtggacatcccctcgagcaggta  
R K A S Q T S V Y L Q E W D I P F E Q V 580

gagctggcgagccatcgccagggccgtggggccgggtgcaccgcggccgtggcat  
E L G E P I G Q G R W G R V H R G R W H 600  
**CA5 (565-836, consisting of 11 conserved subdomains)**

ggcggagggtggccattcgctgtggagatgacggccacaaccaggaccactgaagctc  
G E V A I R L L E M D G H N Q D H L K L 620

ttcaagaaagaggtgatgaactaccggcagacgcggcatgagaacgtggcttcatg  
F K K E V M N Y R Q T R H E N V V L F M 640

ggggcctgcatgaacccgccccacctggcattatcaccagcttgcagggggccggacg  
G A C M N P P H L A I I T S F C K G R T 660

ttgcactcggtgtggggacccaagacgtctctggacatcaacaagacgaggaaatc  
L H S F V R D P K T S L D I N K T R Q I 680

gctcaggagatcatcaagggcatggatatcttcattgcacggcatcgatcacacaaagat  
A Q E I I K G M G Y L H A K G I V H K D 700

ctcaaataagaacgttttatgacaacggcaagggtggcatcacagactcggcgt  
L K S K N V F Y D N G K V V I T D F G L 720

tttggatctcaggcgtggccggaggacggcgtgagaaccagctaaagctgtcccac  
F G I S G V V R E G R R E N Q L K L S H 740

gactggctgtgctatctggccctgagattgtacgcgagatgaccccgaaaaggacag  
D W L C Y L A P E I V R E M T P G K D E 760

**FIGURE 15 (cont'd)**

gatcagctgccattctccaaagctgctgatgtctatgcattggactgtttggatgag  
D Q L P F S K A A D V Y A F G T V W Y E 780

ctgcaagcaagagactggcccttgaagaaccaggctgcagaggcatccatctggcagatt  
L Q A R D W P L K N Q A A E A S I W Q I 800

ggaagcgggaaaggaatgaagcgtgtcctgacttctgtcagctgggaaaggaagtcaagt  
G S G E G M K R V L T S V S L G K E V S 820

gagatcctgtcggcctgctggcttcgacctgcaggagagacccagcttcagcctgctg  
E I L S A C W A F D L Q E R P S F S L L 840

atggacatgctggagaaacttccaaagctgaaccggcgctctccaccctggacacttc  
M D M L E K L P K L N R R L S H P G H F 860

tggaagtcaagtcgtgagttgttag  
W K S A E L -

**FIGURE 16**

Atggatagagcggcggtgcgcgcggcagcgatggcgagaaaaaggagggcggcggcggg  
M D R A A L R A A A M G E K K E G G G G 20

Gcgccgcggcggacggggggcgcagggggccgcccgtcagccgggcgtgcagcagtgcggc  
G A A A D G G A G A A V S R A L Q Q C G 40

Cagctgcagaagctcatcgatatctccatcgccagtcgtgcggggctgcaccaagtgc  
Q L Q K L I D I S I G S L R G L R T K C 60  
**CA1 (42-81)** **AS-ODN3 (51-56)**

tcagtgtctaaacgacccacacacaggagatccggaccctagaggcaaagctggtgaaa  
S V S N D L T Q Q E I R T L E A K L V K 80  
**AS-ODN2 (61-66)** **AS-ODN1 (72-77)**

tacatttgcAACgcAGcAGcAGcAGcAGcttagtgtgaccccaAGcGACAGGACCGCCGAG  
Y I C K Q Q S K L S V T P S D R T A E 100

ctcaacagctacccacgcttcagtgactggctgtacatcttcaacgtgaggcctgaggtg  
L N S Y P R F S D W L Y I F N V R P E V 120

gtgcaggagatccccaaagagactcacactggatgctctgctggagatggacggccaa  
V Q E I P Q E L T L D A L L E M D E A K 140

gccaaggagatgctggcgctggggggccagcacggaggagtgcagccgcctacagaa  
A K E M L R R W G A S T E E C S R L Q Q 160

gcccttacctgccttcggaaaggtaactggctggagggagcacaaaatggactcaggt  
A L T C L R K V T G L G G E H K M D S G 180

tggagttcaacagatgctcgagacagtagcttgggcctccatggacatgcttcctcg  
W S S T D A R D S S L G P P M D M L S S 200

ctggcagagcgggtgccagcactcagggaccccgttccatctccgtgtccgcctgcct  
L G R A G A S T Q G P R S I S V S A L P 220

gcctcagactctccggccccggctcagtgagggcctctcgactcctgtatccccttg  
A S D S P V P G L S E G L S D S C I P L 240

cacaccagcggccggctgaccccccggccctgcacagctcatcacgccccctaccaca  
H T S G R L T P R A L H S F I T P P T T 260

ccccagctacgacggcacgccaagctgaagccaccaaggacaccccccacggccaagccgc  
P Q L R R H A K L K P P R T P P P P S R 280  
**CA2 (274-286)**

aaggcttccagctgctccccagcttccacactcacacggagcaagtccacagtgcc  
K V F Q L L P S F P T L T R S K S H E S 300

cagctggaaaccgaatcgacgacgtcacccgatgaagttgaactccctcatggatcc  
Q L G N R I D D V T P M K F E L P H G S 320

ccacagctggtaacgaaggatatcggctctcggtgacgcacaggttccacaaaagtca  
P Q L V R R D I G L S V T H R F S T K S 340

tggttgtcacaggtgtgcaacgtgtgccagaagagcatgatTTGGCGTGAAGTGCAA  
W L S Q V C N V C Q K S M I F G V K C K 360  
**CA3 (331-377)**

**FIGURE 16 (cont'd)**

cactgcaggtaaaatgccataacaagtgcacaaaggaaagctccgcctgcaggatcacc  
H C R L K C H N K C T K E A P A C R I T 380

ttcctcccactggccaggctcgaggacagagtcgtccgtcagatatcaacaaccca  
F L P L A R L R R T E S V P S D I N N P 400

gtggacagagcagcagagccccatggaaaccctccaaaggccctgacaaagaaggag  
V D R A A E P H F G T L P K A L T K K E 420

caccctccagccatgaacctggactccagcagcaacccatcctccaccacgtcctccaca  
H P P A M N L D S S S N P S S T T S S T 440

ccctcatcgccggcaccttcgtacatctaattccctcagtgccaccacgcctccc  
P S S P A P F L T S S N P S S A T T P P 460  
**CA4 (428-480)**

aacccgtcacctggccagcgggacagcaggttcagctccagacatggcctgttct  
N P S P G Q R D S R F S F P D I S A C S 480

cagggcagccccgtgtccagcacagccgacagtcacacggctcgacgaccagccaaaaca  
Q A A P L S S T A D S T R L D D Q P K T 500

gatgtgcttaggtgttcaacgaaggcagaggctgaggagcctgaggctggcaagttagggca  
D V L G V H E A E A E E P E A G K S E A 520

gaggatgacgaggaggatgaggtggacgacactcccaagctccgcggccctggagggc  
E D D E E D E V D D L P S S R R P W R G 540

cccatctctgaaaggccagccagaccgcgttacctgcaagagtggacatcccctt  
P I S R K A S Q T S V Y L Q E W D I P F 560

gaacaggtgaaactgggcgagccattggacagggctcgctggggccgggtgcaccgaggc  
E Q V E L G E P I G Q G R W G R V H R G 580  
**CA5 (548-819, consisting of 11 conserved subdomains)**

cgtggcatggcgaggtggcattcggtctggagatggacggccacaatcaggaccac  
R W H G E V A I R L L E M D G H N Q D H 600

ctgaagctgttcaagaaaagaggtgtactaccggcagacgcggcatgagaacgtggtg  
L K L F K K E V M N Y R Q T R H E N V V 620

ctcttcatggggcctgcatgaacccacctcacctggcattatcaccagcttctgcaag  
L F M G A C M N P P H L A I I T S F C K 640

ggcggacattgcattcattcgtgagggacccaaagacgtctggacatcaataagact  
G R T L H S F V R D P K T S L D I N K T 660

aggcagatcgcccaggagatcatcaagggcatgggtatcttcatgaaaaaggcatcg  
R Q I A Q E I I K G M G Y L H A K G I V 680

cacaaggacctaagtccaaagaatgttttatgacaacggcaaagtggcatcacagac  
H K D L K S K N V F Y D N G K V V I T D 700

ttcgggctgttggatctcggtgtggccagaggaacggcgagaaaccaactgaaa  
F G L F G I S G V V R E E R R E N Q L K 720

ctgtcacatgactggctgtgttgcgttggcccccggatcgatcgagaaatgatccgggg  
L S H D W L C Y L A P E I V R E M I P G 740

**FIGURE 16 (cont'd)**

cgggacgaggaccagctgcccttctccaaagcagccgatgtctatgcattcggactgtg  
R D E D Q L P F S K A A D V Y A F G T V 760

tggtatgaactacaggaagagactggcccttaagcaccagcctgctgaggccttgcac  
W Y E L Q A R D W P F K H Q P A E A L I 780

tggcagatttgaagtggggaggagactacggcgcttgcattccgtcagcctggggaaag  
W Q I G S G E G V R R V L A S V S L G K 800

gaagtccggcagatcctgtctgcctgtggcttcgatctgcaggagagacccagcttc  
E V G E I L S A C W A F D L Q E R P S F 820

agcctgctgatggacatgctggagaggctggccaaagctgaaccggcggctctccaccct  
S L L M D M L E R L P K L N R R L S H P 840

gggcacttttgaagtccggctgacattaacagcagcaaagtcatggggcttggaaagg  
G H F W K S A D I N S S K V M P R F E R 860

Tttggcctggggaccctggagtcggtaatccaaagatgtag  
F G L G T L E S G N P K M - 880

FIGURE 17

1 atggggagaga aggagggcgg tggcgggggg gatgcggcgg ccgcggaggg tggcgcaggg  
AS-ODN4 (1-18)  
60 gccgcggcca gccgggcgct gcagcagtgt gggcagctcc agaagctcat cgacatctcc  
120 atcggcagtc tgcgcggct gcgcaccaag tgcgcagtgt ctaacgacct caccagcag  
AS-ODN3 (124-141). AS-ODN2 (154-171)  
180 gagatacggc ccctagaggc aaagctggc cgttacattt gtaagcagag gcagtgcag  
AS-ODN1 (187-204) AS-ODN5 (205-222)  
240 ctgagcgtgg ctccccgtga gaggaccca gagctcaaca gctacccccc cttcagcgcac  
AS-ODN6 (247-264)  
300 tggctgtaca ctttcaacgt gaggccggag gtgggtgcagg agatcccccg agacctcacg  
AS-ODN7 (298-315) AS-ODN8 (321-338) AS-ODN9 (351-368)  
360 ctggatgccc tgctggagat gaatgaggcc aagggtgaagg agacgctgcg ggcgtgtggg  
AS-ODN10 (379-396)  
420 gccagcgggg atgagtgtgg ccgtctgcag tatgcctca cctgcctgcg gaaggtgaca  
480 ggcctgggag gggagcacaa ggaggactcc agttggagtt cattggatgc gggcgggaa  
AS-ODN11 (511-528) AS-ODN12  
540 agtggctcag ggccttccac ggacaccctc tcagcagcca gcctgcccgt gccccccagg  
(531-548)  
600 agctcccagc tggcagagc aggcaacacgc gcccagggcc cacgctccat ctccgtgtca  
660 gctctgcccc cctcagactc ccccacccccc agctttagtg agggcctctc agacacctgt  
720 attccccctgc acggcagcgg cggctgacc cccccgtgccc tgcacagctt catcaccctcg  
780 cccacccacac cccagctgcg acggcacacc aagctgaagc caccacggac gccccccccc  
840 cccaagccca aggtcttcca gctgctgccc agttccccca cactcacccg gagcaagttc  
900 catgagtc tca agtggggaa ccgcatttgc gacgtctctt cgatgagggtt tgcatttcgc  
960 catggatccc cacagatggt acggaggat atcgggctgt cggtgcgcgca cagggttctcc  
1020 accaagttct ggctgtcgca ggtctccac gtgtgccaga agagcatgtat atttggagtg  
1080 aagtgcagc attgcagggtt gaagtgtcac aacaatgtt ccaaagaagc ccctgcctgt  
1140 agaatatcc tccgtccact aactcgctt cggaggacag aatctgtccc ctggacatc  
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1260 aagaaggagc accctccggc catgaatcac ctggactcca gcagcaaccc ttccctccacc  
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2160 tttggatct caggcgtggt ccgagaggga cggcgtgaga accagctaaa gctgtcccac  
2220 gactggctgt gctatctggc ccctgagatt gtacgcgaga tgaccccccgg gaaggacag  
2280 gatcagctgc cattctccaa agctgtgtat gctctatgcat ttggactgt ttgttatgag  
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2460 gagatcctgt cggcctgcgt ggcttgcac ctgcaggaga gacccagctt cagcctgcgt  
2520 atggacatgc tggagaaact tcccaagctg aaccggcggc tctcccaccc tggacacttc  
2580 tggaaagtctg ctgagttgtat g

FIGURE 18

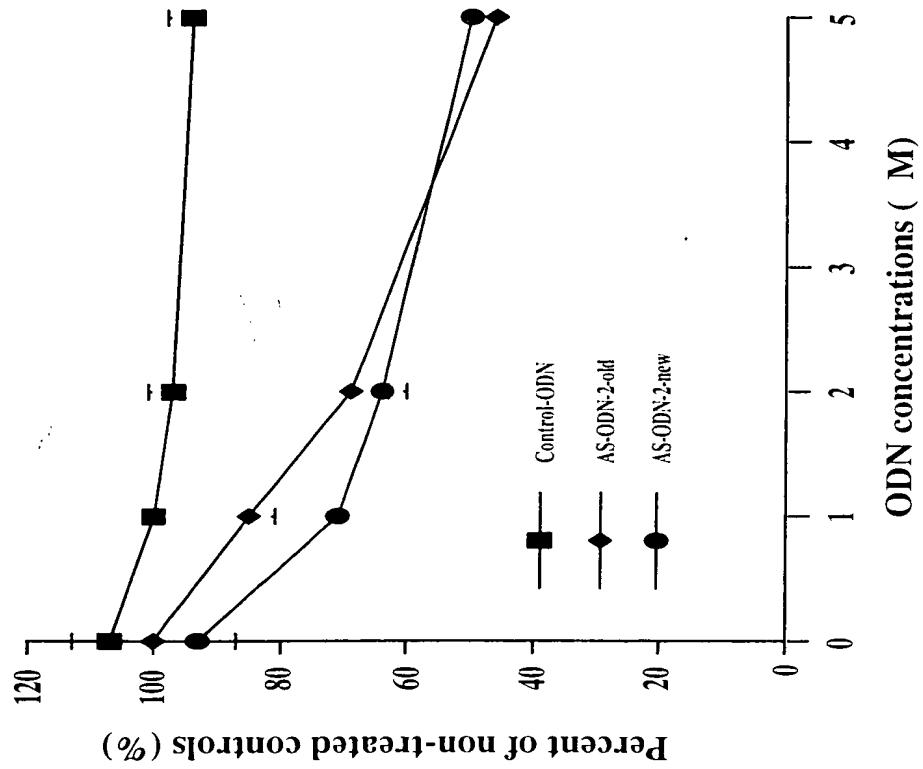
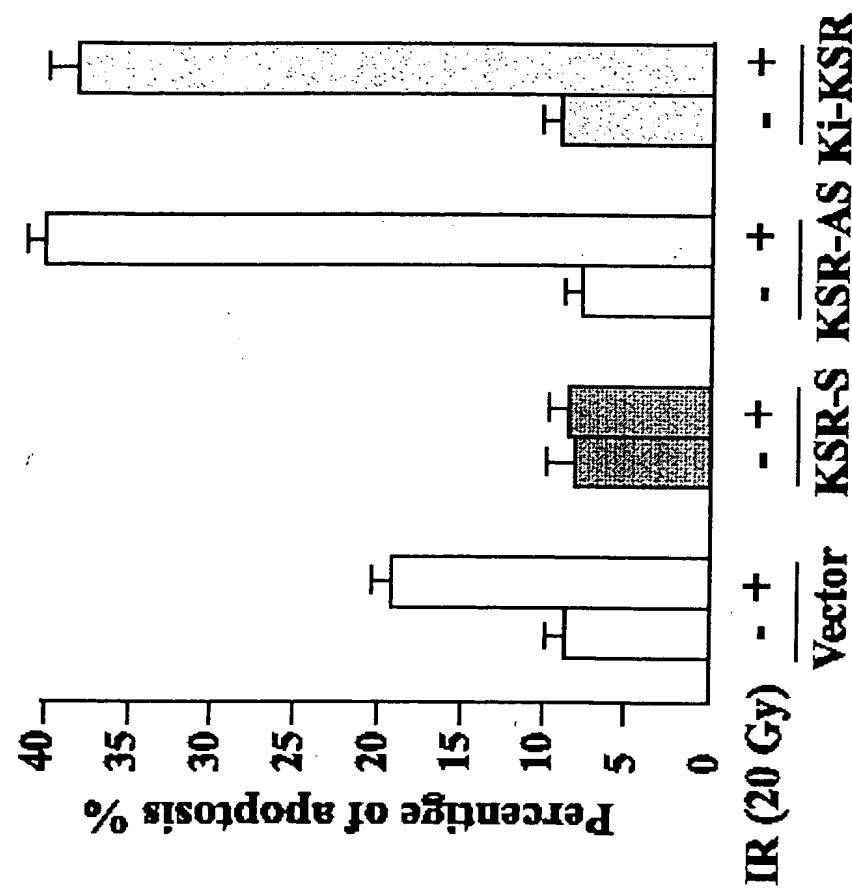


Figure 19. Proliferation assay of PANC-1 cells treated with old- and new- KSR AS-ODN2

FIGURE 19



Inactivation of KSR1 by KSR-AS sensitizes A431 cells to ionizing radiation-induced apoptosis

FIGURE 20

